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CONTENTS.

	Page
Electro-Encephalography: An Aid to Diagnosis. By W. Grey Walter, M.A.	1
Malum Immedicabile Cancer. By E. Watson-Williams, M.C., Ch.M.	9
University of Bristol Dental Hospital and School	41
Reviews of Books	46
Editorial Notes	54
Obituaries: Julia Woolnough Gross	58
George Henry Temple, M.B., C.M.	59
Elliott Thornton Glenny, M.B., B.S.Lond., M.R.C.S., L.R.C.P.	61
Meetings of Societies	62
The Medical Library of the University of Bristol	62
Publications Received	66
Local Medical Notes	67

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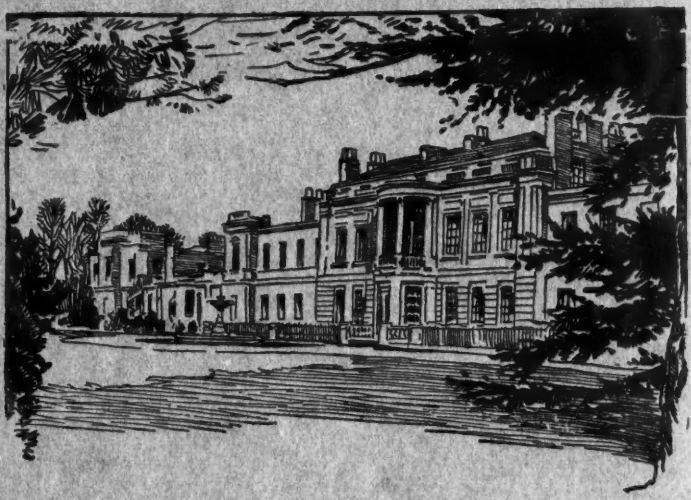

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The Bristol Medico-Chirurgical Journal

" Scire est nescire, nisi id me
Scire alius sciret."

SPRING, 1940.

ELECTRO-ENCEPHALOGRAPHY: AN AID TO DIAGNOSIS.

BY

W. Grey Walter, M.A.

Physiologist to the Burden Neurological Institute, Bristol.

The attitude of the medical practitioner to physiology is necessarily utilitarian and his familiarity with the various branches of the subject varies with their usefulness, not, as a cynic would suggest, with their simplicity. It is not surprising, therefore, that electro-physiology, though attracting great academic attention, is the least familiar of laboratory studies, for until recently the electro-cardiogram was the only application of the young and lively science whose *doyen* in this country is Professor Adrian of Cambridge. It is a

commonplace of biology that every phase of living action is association with characteristic electrical changes, the "action potentials" of living cells. Why is it that the electro-cardiogram alone among action potentials has been impressed for service in the cause of medicine? The reasons are chiefly technical. All the electrical signals of activity are small, and apparatus to record them must be either very sensitive and delicate or must incorporate elaborate devices to magnify these small electric discharges. Such apparatus is expensive and difficult to keep in order, so that except in the case of the heart, which happens to provide one of the largest bio-electric potentials, the electrically interesting parts of the body have remained inaccessible except to those undismayed by such words as "grid leak" and "high frequency pentode."

In the last few years, however, a branch of electro-physiology has developed a definite degree of clinical importance, although it involves equipment even more impressive than that to be found in most physiological laboratories. This is electro-encephalography, which is beginning to do for the brain what electro-cardiography does for the heart.

It has been known for many years that the exposed brain of an animal produces electrical discharges on stimulation of a sense organ, and also that it frequently develops spontaneous rhythmic discharges independently of sensory stimulation. But the human brain was not explored electrically until recently, partly because it was not considered justifiable to prolong a cranial operation merely to this end: and it was not until 1929 that Berger of Jena showed that the

spontaneous electrical activity of the human brain could be detected by connecting electrodes on the scalp to sufficiently sensitive recording apparatus. Berger claimed that when his subjects were resting quietly he could detect rhythmic electrical waves at a frequency of about 10 per second. These were very small, about one-hundredth the size of those of the electro-cardiogram, and were diminished by any sort of mental or visual activity. Berger called these "alpha waves." He also thought he detected faster "beta waves" of more variable behaviour. This discovery was neglected until Adrian surprised himself by confirming it in 1934. Adrian and his colleagues went further and localized the origin of these waves to the occipital visual association cortex, and they emphasized that they were waves of rest, not action, disappearing when the eyes were opened or when the mind was active. They may be considered as a sign that the visual association areas are "marking time." These "inaction potentials," the alpha waves, are the only definite and universally accepted normal electrical discharge from the human brain seen when electrodes are placed on the scalp. There are other normal discharges, but they are too small to be seen unless electrodes are placed directly on the cortex exposed at operations.

Being a Professor of Psychiatry, Berger soon turned his attention to the pathological, but his results were clouded by controversial and sometimes incoherent interpretation; nor was his equipment adequate for this purpose. Working originally on the normal electro-encephalogram Walter happened in 1936 to take records from a few patients suspected of having

cerebral tumours. He found that these records showed slow waves entirely unlike the normal ones, and by using three recording systems simultaneously he was able to locate the origin of these slow waves, which he called "delta waves." The patients whose "delta foci" were located in this way were subsequently found to have tumours in or very near to the region indicated by electro-encephalography. The series begun with these few chance cases has now grown to several hundred, and the following findings would be agreed to by the numerous other workers who have confirmed Walter's work:—

1. The great majority of tumours which affect the cortex either directly by infiltration or indirectly by other means produce in it a condition in which a delta discharge occurs.

2. The new growth itself is entirely inactive electrically.

3. When the intercranial pressure is grossly raised the whole cortex may show a delta discharge. If the pressure can be lowered by injection of hypertonic solutions the general discharge will diminish, unmasking the local abnormality.

4. The greater and more acute the damage the slower are the delta waves. Benign tumours may give rise to a discharge almost as rapid as the normal alpha rhythm. A very benign, long-standing tumour may give scarcely any sign of its existence. For this reason a *normal* electro-encephalogram must be regarded as inconclusive.

5. Tumours below the cerebral hemispheres cannot be localized, though their indirect effects can sometimes be observed.

The above observations apply to every "space-occupying lesion," such as a cerebral abscess or a hæmatoma. It is important to note that in a case of hæmatoma the abnormal discharge is produced only during the first few weeks of its existence, and the same applies to trauma.

The delta discharge is a non-specific sign of cerebral distress. The cells may go on to a terminal stage of atrophy or recover entirely. In all conditions but one, the time for which a given area will produce a delta discharge is strictly limited. That one condition is idiopathic epilepsy. Golla, Graham and Walter showed in 1937 that about half of a group of several hundred "persons complaining of fits" showed a continuous resting abnormality in the electro-encephalogram. This resembles in some ways the tumour records, but the discharge is more rhythmic. Here, again, the results have been confirmed by many observers and may be summarized as follows:—

1. About 50 per cent. of epileptic patients show a continuous electro-encephalographic abnormality.

2. In a patient complaining chiefly of *grand mal* attacks, the focus of the abnormality is in the region of the superior frontal gyrus on either or both sides.

3. In a patient with only minor attacks the focus is often post-central.

4. During an attack the abnormality increases enormously in area and magnitude. A major attack is characterized by a rapid discharge, a minor one by a mixed fast and slow "spike and wave" discharge, a psychomotor or "equivalent" by a smooth, slow discharge.

5. In most epileptic patients whose resting electro-encephalograms are normal, a clear abnormality can be evoked by a few minutes voluntary over-breathing. In about 10 per cent. of such cases a fit will also be induced.

6. If the patients are divided into age groups, those above forty will contain few with abnormal electro-encephalograms, those below twenty a high proportion. By using over-breathing nearly all epileptic children are found to have abnormal electro-encephalograms, and a certain number whose complaint was merely bad behaviour also show abnormalities.

7. The resting abnormality is not greatly affected by drugs even when these succeed in controlling the fits: sedation seems merely to discourage the abnormality from spreading over a wider area.

8. Cases of true traumatic epilepsy do not show a resting abnormality, although during a fit the record is the same as in an idiopathic case. (Also in fits induced with Cardiazol.)

In general, electro-encephalography provides a real positive test whereby, in young persons at least, true essential epilepsy may be distinguished from hysterical or functional conditions, although as with cerebral tumours a normal or negative finding does not give the patient a clean bill.

There is no space to discuss the brilliant though somewhat oblique light which these discoveries have thrown on the ancient problem of epilepsy. As may be imagined, it has revealed enormous gaps in our fundamental knowledge and cast deep shadows on

some of our most cherished axioms. That electrical changes are closely associated with the fit-producing mechanism seems extremely likely; indeed, electrical stimulation is now being used to induce convulsions in the treatment of schizophrenia. Perhaps it is not too optimistic to hope that by combining the study of these artificial fits with the electrical data concerning epilepsy a new epoch in the study of convulsive disorders may be opened.

In application, electro-encephalography can never displace or supplant the conventional clinical methods. In cases of cerebral tumour it can supply the same sort of information as air-replacement with the disadvantage that sub-cerebral lesions cannot be accurately detected, and the great advantage that it causes absolutely no pain or danger to the patient. In epilepsy the electrical supplement to the clinical examination and history is of unique value. True, it is still only of academic interest to know from what part of the brain a fit starts, but the immediate painless result eliminates the long and often fruitless wait before a fit is observed. Moreover, a positive finding in a young person suffering from a " behaviour disorder " can greatly simplify the task of the psychiatrist.

In some cases interpretation of the records is difficult and certain points of detail are still the subject of controversy, as is also the case in electro-cardiography, but it is safe to say that the discovery of slow delta waves in any patient suspected of suffering from a cerebral tumour, cerebral abscess, intracranial hæmatoma, early head injury, or essential epilepsy is reliable evidence of an organic basis for the trouble;

in most cases the position of the lesion can be indicated and in some its nature may be suggested. The method is still too complicated to be used by anyone but an electrical expert, but in the course of time it may be considerably simplified for clinical purposes.

MALUM IMMEDICABILE CANCER.

BY

E. WATSON-WILLIAMS, M.C., CH.M.,

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HARD FACTS.

In 1936 the population of this country was just over forty millions. There were half a million deaths, of which over 66,000 were due to cancer. Cancer comes second only to heart disease among the principal causes of death, and accounts for ten times as many deaths as do road accidents: since the last Great War it has caused many more deaths than did the war itself.

TABLE I.

DEATHS IN ENGLAND AND WALES, 1936.*

Age.	From all Causes.	From Cancer.	Cancer per cent. of "all Causes."
Under 35	104,905	1,581	1·5
35—65	142,088	30,813	21·0 } 16
Over 65	249,771	33,960	13·5 }
Total	496,764	66,354	13·3

Economic Importance.—If cancer affected only the very old, its importance might be little. Whatever the

* Throughout this paper figures are quoted from *The Registrar-General's Statistical Review*, unless otherwise stated. I apologize for the formidable appearance of the Tables: they show the actual facts.

elderly individual himself might feel about it, whether he died of cancer, pneumonia, or from bombing attacks, need not greatly concern the nation. But in the prime of life, between thirty-five and sixty-five, ability and intellectual powers are at their highest, and family, business and national responsibilities are greatest. Yet it is among those in this "socially valuable" period of life that nearly half all deaths from cancer occur, and these amount to one-fifth of all deaths in that period. If matters continue as they are, of all those who reach the age of thirty-five *one in six is going to die of cancer.*

Cancer is Increasing.—This cry has been constant for sixty years and more. Not only are deaths due to cancer increasing, but they are increasing more rapidly than is the total population—the *rate* is increasing.

TABLE II.

ENGLAND AND WALES.

		1891.	1901.	1911.	1921.	1926.	1931.	1936.
Population, millions ..		29·1	33·2	36·1	37·9	39·1	39·9	40·8
Deaths from Cancer ..		—	—	**35,902**	**46,022**	**53,220**	**59,346**	**66,354**
Annual Death-rates.	**Cancer, per million living.**	**692**	**842**	**992**	**1,215**	**1,362**	**1,484**	**1,625**
	Phthisis, per million living.	1,599	1,264	1,062	884	771	742	583
	Cancer, plus Phthisis	2,291	2,106	2,054	2,099	2,133	2,226	2,208
	All causes, per 1,000 living.	20·2	16·9	14·6	12·1	11·6	12·3	12·1

The increase in the cancer death-rate is shown in Table II and as a graph in Figure 3. In the latter, observe that the war had no effect on the real death-rate from cancer, since war casualties affected a younger section of the population; but after 1918, when over 100,000 persons died of influenza (sending

the death-rate up to 17·6, instead of the 14·0 expected) there is a definite drop in cancer deaths. Although the brunt of influenza fell on younger persons, it looks as if it killed off enough of those just about to develop cancer to diminish the cancer death-rate for some years.

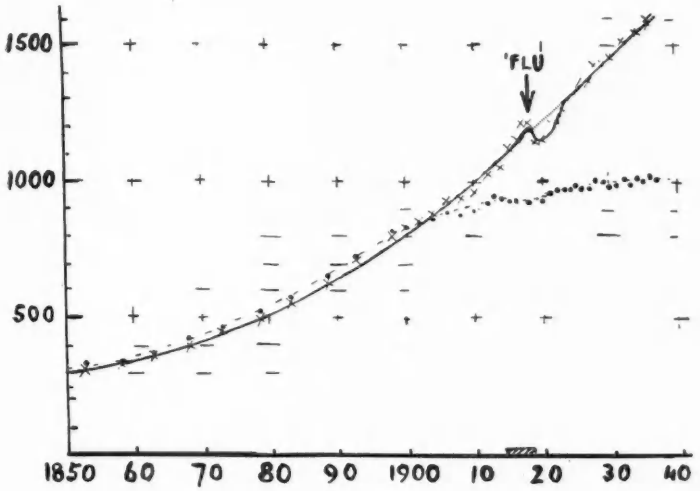


FIG. 3.

England and Wales. Cancer. Continuous line: Annual death-rate per million living. Broken line: "Standardized" annual death-rate. The distance between the two curves is a measure of changes in composition of the population, trivial before 1900, increasing ever since.

There has been a very considerable increase in the cancer death-rate, even within the last ten years. Is it possible that within so short a time the composition of the population has materially changed? Table IV shows how great this change has been: there is a very large increase in the number of persons who die after fifty-five—that is, of course, in the number who live beyond that age. Indeed, between 1926 and 1936, the increase in deaths after sixty-five is much greater than

TABLE IV.

ENGLAND AND WALES. DEATHS FROM ALL C

Ages.	35—45	45—55
1921	35,126 (3,187 = 9·1%)	44,379 (8,492 = 19·1%)
1926	28,511 (3,138 = 11·0%)	45,629 (9,042 = 19·8%)
1936	25,274 (3,504 = 13·8%)	45,937 (9,401 = 20·5%)
Increase 1926–36	(366)	308 (359)

Figures in brackets are cancer deaths, and percen

the total increase in deaths. Since cancer is almost confined to the second half of life, we might *expect* this "ageing" of the population to be reflected in an increase in cancer deaths. Cabinet Ministers may deplore "an ageing population," but it can only be avoided if the individuals who compose that population have sufficient altruism to die young. In that case it is conceivable that there would be a reduction in deaths from cancer, though there are substantial disadvantages in this method of attaining even so desirable a result.

From Table IV we see that of *all* deaths the proportion due to cancer is steadily increasing: this is obvious also when we remember that for many years the death-rate from "all causes" has been falling, while the cancer death-rate has been rising. But this is not *wholly* due to increase in the proportion of those who live to reach old age. A very serious feature of Table IV is the steady increase in cancer in early middle age. Between 1926 and 1936 the increase in cancer deaths at ages 45—55 was greater than the total increase in deaths from all causes. In the group aged 35—45 there has been a steady and considerable

IV.

ALL CAUSES AT DIFFERENT AGES.

55—65	65—75	Over 75	All Ages.
61,527	80,495	85,178	458,629 (46,022 = 10·3%)
67,450	91,497	96,528	453,804 (53,220 = 11·5%)
82,582	119,079	130,801	496,764 (66,354 = 13·3%)
15,132	27,582	34,273	43,060 (13,134)

percentage due to cancer of all deaths in each group.

decrease in deaths from all causes; but cancer deaths are increasing: in 1921 cancer was responsible for 9 per cent. of all deaths in this age-group, in 1926 for 11 per cent. and in 1936 for nearly 14 per cent.

The effect of change in the composition of the population can be eliminated by constructing a table to show, not what actually happens, but what would have happened if the age-group composition of the population had been always what it was in 1901.

The broken line in Figure 3 shows in the form of a graph the changes in the annual death-rate from cancer as they would have appeared if the composition of the population had remained constant. From it we see that during almost a century there has been a steady increase in the "standardized" death-rate from cancer until about fifteen years ago, since when the rate has remained constant.

The distance between the two curves is a measure of changes in the composition of the population, which were very small up to 1900 and have been increasing ever since. The suggestion has been made that after allowing for these changes the remaining increase in cancer is apparent, not real, and due to increased

TABLE V.

DEATHS FROM CANCER AT VARIOUS AGES.

Age.	Males.			Females.			
				Deaths from Cancer.			Death
	Deaths from Cancer.	Millions living.	Death-rate per million.	All sites.	Breast and Uterus.	Millions living.	All sites
Under 25 ..	304	7·86	39	237	*10*	7·78	3
25—35 ..	454	3·32	137	586	*203*	3·49	16
35—45 ..	1,219	2·70	412	2,285	*1,118*	3·11	73
45—55 ..	3,799	2·33	1,630	5,602	*2,593*	2·74	2,05
55—65 ..	9,045	1·92	4,710	8,863	*3,176*	2·20	4,03
65—75 ..	11,126	1·09	10,200	10,050	*2,619*	1·34	7,50
Over 75 ..	5,643	0·37	15,300	7,141	*1,698*	0·59	12,13
Total over 35 ..	30,832	8·41	3,660*	33,941	*11,204*	9·98	3,40
Total ..	31,590	19·59	—	34,764	*11,417*	21·25	—

* Cancer is negligible for ages under thirty-five, so that the rate calculate on lives

accuracy in diagnosis. Can we accept the corollary that in this country as recently as 1880 half of all *deaths* due to cancer—and a third of all *deaths* due to cancer of mouth, skin, breast or œsophagus—were wrongly certified ?

Be that as it may, we must not be hypnotized by an imaginary state of affairs, such as is represented by a "standardized" population. We have to deal with facts—with the population as it is—and must therefore concentrate on the upper curve, and remember that *year by year there is a steady increase in the number, and in the actual rate, of deaths by cancer.*

Sex and Age.—In Table V cancer deaths for 1936 have been analysed into groups by sex and age, with cancer of uterus and breast shown separately. One-third of all cancer deaths in women, and one half of cancer deaths under 60, are due to cancer in these sites, where the maximum incidence is much earlier in

TABLE V.

VARIOUS AGES. ENGLAND AND WALES, 1936.

	Persons.					
	Death rate per million.					
	All sites.	Omitting Breast and Uterus.	Deaths from Cancer.	Per cent. of all Cancer Deaths.	Millions living.	Death-rate per million.
7·78	30	*30*	541	0·8	15·64	35
3·49	163	*110*	1,040	1·6	6·81	152
3·11	734	*409*	3,504	5·2	5·81	603
2·74	2,050	*1,368*	9,401	14·2	5·07	1,854
2·20	4,030	*2,585*	17,908	27·0	4·12	4,338
1·34	7,500	*5,546*	21,176	32·0	2·43	8,715
0·59	12,130	*9,225*	12,784	19·2	0·95	13,450
9·98	3,400*	—	64,773	97·6	18·396	3,520*
21·25	—	—	66,354	—	40·838	—

alculate on lives above this age gives a truer picture than if all ages are used.

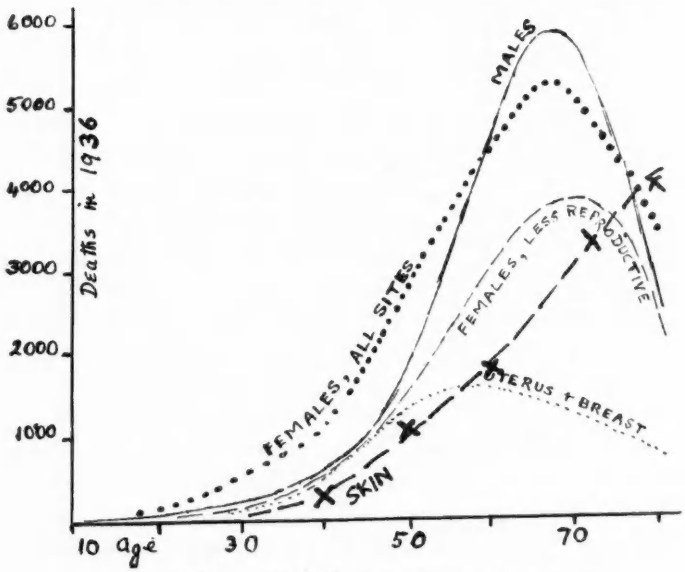
life than for cancer elsewhere in either sex. If we omit cancer of breast and uterus from our calculations we see that for the earlier years the death-rate is almost exactly the same for the two sexes. Figure 5 (p. 16) illustrates the age incidence.

Another point concerning cancer of breast and uterus is that the results of treatment of cancer in these sites are very much better than for cancer anywhere else (Table VI): which means that the difference between cases and deaths, elsewhere inconsiderable, is here quite material. In fact, some two-fifths of all women's cancer occurs in these sites. Although the cancer death-rate for men over thirty-five is higher than for women, the actual case-rate is slightly higher for women than for men. When we note from the table how many more women than men there are in the population at all adult ages we can understand why hospital figures show a very much greater incidence

of cancer in *women*, though the Registrar-General's figures give a slightly higher death-rate for *men*.

The third deduction we make from this table is that *the death-rate from cancer is rather more than doubled with the passage of each decade*. Does this not imply an ætiology related to actual "ageing," not merely the passage of time ?

Sites.—The distribution of cancer by sites is shown in Table VI, pp. 18-19. For many sites the two sexes are equally affected, but not for all. If we express the number of deaths in females as one, we find the deaths for males are approximately as follows: lip, 12; tongue, mouth, tonsil, 8; pharynx, œsophagus, larynx,



Skin cancer, both sexes, shown × 10.

FIG. 5.

Deaths from cancer at different ages. England and Wales, 1936. Cancer of testis shows age-incidence like that of uterine cancer.

lung, 3; jaw, rectum, bladder, 2; gall bladder, 0·5. These ratios have changed very little since 1901. But during that interval the increase in cancer has been conspicuous in certain sites. Cancers of lung are *six times* as frequent as before, of prostate about three times, of colon and ovary twice as frequent: on the other hand, cancers of liver, jaw and mesentery are only half as frequent as formerly.

Status.—In 1921 it was pointed out that if the male population is arranged in economic grades—well-to-do, artisan, labourer, etc.—the incidence of cancer in the lower grades is materially greater than in the higher. The difference appears chiefly in certain sites: it is greatest for lip, tongue and tonsil, less for larynx, œsophagus and skin, small for stomach (lung was not considered). There is a curious resemblance between this list and that for site-sex-difference: but we might equally claim that the "economic" differences appear in squamous epithelium. A similar survey of married women, classified according to husband's economic grade, shows the same state of affairs for the uterus, the lowest grade having about twice the cancer incidence of the highest: the effect is diminished by a reverse grading for cancer of breast. It has been suggested that the differences are due to variations in standards of cleanliness. For women the effect might be related to frequency of pregnancies; cancer of the uterus is more frequent in the multipara, of the breast in the sterile. Whatever the explanation, it seems clear that rich and plentiful food, wines, and what we may call the material comforts of life, so far from tending to produce cancer, if they have any effect, are beneficial.

The town dweller is as well off as the countryman. For example, the cancer death-rate for ages 55—75 is

TABLE VI.

ENGLAND AND WALES.

Deaths recorded in 1935.

Site.	Males.	Females.	Total.	Per cent. of Total.	Per su five
Tongue, Lips, Jaws, Pharynx	2,972	537	3,509	5·4	(1,4 (2,1
Œsophagus	1,772	705	2,477	3·8	
Stomach	6,926	5,604	12,530	19·3	
Colon and Rectum	5,823	5,213	11,036	17·1	
Liver	1,177	1,200	2,377	3·6	
Other Abdominal Organs	2,936	3,649	6,585	10·4	
	21,606	16,908	38,514	59·6	
Larynx and Lung	3,492	1,107	4,599	7·1	
Bladder, Prostate, etc.	3,572			5·5	
Bladder, Ovary, etc.	—	2,694	—	4·2	
Uterus	—	4,470	—	6·8	
Breast	77	6,768	—	10·6	
		13,932	17,581		
Skin	606	483	1,089	1·6	(R. (E.
Bones, Brain, etc.	1,466	1,287	2,753	4·3	
All sites	30,819	33,727	64,546	100	
1934	—	—	63,263		

The deaths represent deaths of all persons dying *with* cancer. If w accept t where cancer was regarded as irrelevant, we find that there is a reductio of about and cancer of skin 150 less (15 per cent.).

slightly higher is rural areas than in London and the large cities. We may shade the map of Great Britain according to local incidence of cancer. The industrial North is perhaps a little darker than the South and East, but the "black spots" are Anglesea and Flintshire !

For many years there has been a close resemblance between the main features and, if we allow for differences in age-group composition of the populations, the incidence of cancer in this country, Australia,

TABLE VI.

AND AND WALES. CANCER.

Cases Estimated for 1934.					
	Per cent. survive five years.	Total Cases.	Survive 5 years.		
			Cases.	Per cent. of Total Cases.	
5·4	(1,404) 15	1,654	250	0·36	
	(2,105) 4	2,191	86	0·12	
3·8	?	2,477	—	—	
19·3	4	13,051	521	0·77	
17·1	13*a*	12,663	1,627	2·23	
3·6	?	2,377	—	—	
10·4	?	6,585	—	—	
59·6		40,998	—	—	
7·1	?	4,699	(?100) (*b*)	(0·15)	
5·5					
4·2	2	6,394	128	0·18	
6·8	26c	5,962	1,492	2·04	
10·6	30	9,779	2,934	4·02	
1·6	(R. 500) 60*d*	1,250	750	0·96	
	(E. 589) 18	721	132	0·18	
4·3	2	2,808	55	0·07	
100	—	72,621(*f*)	8,075	11·08	
		56,880(*e*)	*3,549*(*e*)	*6*(*e*)	

NOTES.

(*a*) Colon 7 per cent., rectum 18 per cent.: about equal numbers.

(*b*) About 100 patients of all sites marked " ? " guessed to survive.

(*c*) 95 per cent. cervix: body of uterus survival rate 2 per cent., survivors included in the 100 under (*b*).

(*d*) Rodent ulcer about 45 per cent. of total, Epithelioma 55 per cent.

(*e*) As line above, but excluding breast and uterus.

(*f*) Cases.	Per million over 35.
M. 32,806	4,025
F. 39,815	4,110

r. If we accept the physician's opinion as to *actual cause* of death, excluding those reductio of about 2,500 in all, or 4 per cent. Cancer of breast is 500 less (7 per cent.)

United States, France, Germany, Holland, Denmark, Belgium, Switzerland, etc. When we go farther afield comparisons become difficult. Like a winter's day, primitive or savage life tends to be short, dull and dirty. With flood, famine, dangerous diseases, parasites, reptiles, animals and humans as competitors cancer takes a back place. And in this sense we must agree that cancer is a disease of civilization. But no race—indeed, no species—is exempt.

In Bavaria cancer of the stomach is more frequent

than with ourselves, in Holland cancer of the uterus; but the total cancer incidence is not greater. The negro is stated to show a relative immunity: but in the United States, uncorrected for age differences, it is only as three to four compared with whites. India shows a much lower crude cancer mortality than England: but the whole of India and also Bombay exhibit an incidence of cancer, per 1,000 of population at each age, exactly the same as our own. A survey of all in-patients in Indian hospitals shows precisely the same incidence of cancer among the different races and creeds, meat-eaters and vegetarians, wine drinkers and abstainers. In Ceylon betel-nut cancer of the mouth is frequent, in Java cancer of the liver: but neither country shows a total cancer rate higher than India. In Egypt the Mohammedans claim a relative immunity, but this has not been subjected to test by age-groups. Though it is said that Jews have a relative immunity to cancer of penis and uterus, they show in every State a total cancer-rate identical with that of the Gentiles.

Sarcoma ought really to be considered apart. In age incidence it shows far less differentiation than carcinoma; it appears sometimes definitely to originate from a single trauma; it has been cured by an attack of erysipelas, spontaneous or artificial; and it is far more prone than carcinoma to dissemination through the blood, instead of through lymph vessels. It affects mainly the kidney, bones, brain and lymphatic tissues. But it forms only a small part, some 3 per cent., of all cancer: and although the conditions governing its appearance and progress may differ from those affecting carcinoma, they seem in all probability to be at least of the same order.

TREATMENT.

For many years great emphasis has been laid on the importance of early diganosis and the danger of delay. As regards cancer in a few situations it may be true that the results of treatment could be much improved if patients sought advice sooner. But how far is that true of cancer of the lungs, liver, alimentary tract, ovary, uterus and prostate—that is, of three-fourths of the whole ? Early cancer is painless and in a very large proportion of cases symptomless : quite often, indeed, metastases attract attention before the primary growth has been noticed at all. If every surgeon were carefully to analyse his cases, cancerous and innocent, I feel fairly confident that the proportion in which he could point to avoidable delay as a factor *materially* affecting results would be quite small. X-ray examination and the Bendien or similar tests cannot be relied upon to exclude early cancer, and it is clearly impossible to advise every adult with vague or trivial symptoms to submit to laparotomy. In fact, carcinophobia is already causing a whole heap of trouble. I do not believe that with our present equipment we can hope, by reducing the period between first significant symptoms and beginning treatment, to obtain very materially better results.

Surgery.—Even at best, surgical treatment of cancer is a somewhat crude business, amounting to nothing less than " amputation " of the affected parts. Man will get along and manage to support existence after the loss of a leg, stomach, colon, organs of generation, or even a lung or a large part of the brain : but it is idle to pretend that this is anything more than making the best of a bad job—mutilation is preferred to an otherwise inevitable, though lingering and painful, death.

Radiation.—To avoid a major operation would seem a material gain. Few patients, and not all doctors, understand how severely radiation taxes a patient. The problem is to kill the growth without (quite) killing the patient: the margin is often very small and occasionally overshot. In fact, it is not much use producing more powerful plant until we have bred a more robust race of patients. As it is, many growths are resistant to radiation. By mere chance the first growths to be radiated were rodent ulcers: had epitheliomata been chosen, the history of radiation might well have been different. In comparing results with those of surgery we have to remember that many patients are treated by radiation for whom surgery could offer nothing; and even where the patient does not survive five years there may be considerable gain in comfort as well as survival longer than without treatment.

Assessment.—In assessing results of any form of treatment we encounter many difficulties. We will use the word "cure" to mean survival in health and without evidence of recurrence for five years. There will be a few patients who survive five years, but later die of a recurrence: perhaps these will balance those lost sight of and written off as dead who have, nevertheless, really survived (I know from personal experience that this sometimes happens). Merely to secure a complete five-year follow-up is extremely difficult, even in times of peace: war conditions will make it impossible. Another difficulty is to secure a reasonably even standard of selection and classification of cases.

But the real trouble begins when we try to assess the figures we obtain. There are many series giving results of cases treated, but very few stating what

proportion of all cases are considered suitable for treatment. The surgeon who refuses all but favourable cases may show a better proportion of cures than one who treats every case not perfectly hopeless: yet the latter may actually have a better ratio of cures to total cases. Good results have a greater probability of being published than poor. And when a surgeon is known to be interested in a particular condition, not only does his increasing experience improve his results, but he tends to see an undue proportion of favourable cases; since professional fame may attract operable cases, but not the hopeless—that is to say, his cases are pre-selected. There may therefore be some difference of opinion as to the average proportion of cures assigned below to various classes of cancer: I believe, however, that these differences will not prove serious. The basis of the figures given is mainly Short's *Index of Prognosis* and Choyce's *System of Surgery*, 1935.

Cancer of mouth.—Tongue: 303 cases, 185 operated on (18 died of operation), 25 per cent. of 185 or 15 per cent. of whole cured. 473 radiated, 32=7 per cent. cured. Choyce says 20 per cent. cured after radium treatment for selected cases. Lip: results much better, but numbers too few to affect figures for group.

Throat.—Surgery gives good results for very rare early cancer of vocal cord: elsewhere results poor. Radiation (often with operation as well)=4 per cent. cured. Harmer (*Radiotherapy*, 1932), 1,662 patients, 41 cured.

Stomach.—Radiation useless. 528 cases, 156 operated on, 10=2 per cent. cured. Mayo gives 2,094 cases, 736 operated (91 died of operation), 184=9 per cent. cured—much better than any other figures. Average apparently 4 per cent. cured.

Colon.—Radiation useless. 60 per cent. suitable for operation (1 in 4 die of operation), 7 per cent. cured. Rectum: 40 per cent. suitable for operation and /or radiation, 18 per cent. cured.

Breast.—Early cases, 30 per cent. of total, 80 per cent. cured after operation and radiation (radiation alone gives worse results). Mayo says 70 per cent. early, 22 per cent. late and 36 per cent. of all cases cured. Halsted gives 40 per cent. of all *treated* cured : Leeds 36 per cent. : Guy's (1926) 28 per cent. Average=30 per cent. of all cases cured.

Uterus.—Cervix : 3,703 cases, 2,239 operated (mortality 16 per cent.), 23 per cent. cured. Radiation is replacing surgery : 57 per cent. early, 18 per cent. late, 26 per cent. of all cases cured.

Prostate.—1,000 cases, 164 operated on, 21 cured—nearly all cases in which growth so small that it was only discovered after operation : radiation less successful. Bladder : 708 cases, 219 treated, 18 per cent. of these cured. For whole group, bladder, prostate, ovary, etc., apparently 2 per cent. cured.

Skin.—Nearly half rodent ulcer, radiated 60 per cent. cured. Epithelioma, 18 per cent. cured.

Gullet, liver, other abdominal organs, lungs and mediastinum, bones, connective tissue and brain : An occasional lucky patient is cured.

It is clear that if 26 per cent. of all cases of cancer of the uterus are cured, 1000 deaths represent $1000 \times \frac{100}{74} = 1351$ cases. Assume that all patients who develop cancer in 1934, and are *not* cured, will die in 1935 : a large proportion actually will do so, and we may expect those who survive until 1936 to balance those who developed cancer in 1933 and died in 1935, and so forth.

The left-hand portion of Table VI shows the actual deaths from cancer in 1935, arranged by sites and sex. The right-hand portion is necessarily very speculative. But if we accept the figures given above as approximately correct, we can work out at least roughly how many cases of cancer occurred in 1934 in each site to correspond with the deaths in 1935. The only large source of error is in cancer of the breast. If we take

36 per cent. instead of 30 per cent. for our "cures," the survivors in this group are 3,850, instead of 2,934: the total survivors are 916 more, that is, 9,456, 12·9 per cent. of total cases: and a small adjustment must be made in all the figures in the last column. As a check, an entirely different set of results was analysed: the "cures" worked out at just under 13 per cent., compared with the 11 per cent. (or perhaps 12·9 per cent.) of the Table. This suggests that the errors are at least not enormous.

If we accept Table VI we see that, corresponding to the 64,546 deaths from cancer in 1935, some 72,000 or 73,000 *cases* of cancer developed in 1934. If the calculated survivals are too few, the number of actual cases was even greater.

But the main features of Table VI must induce a profound melancholy. Can it be that of all those who develop cancer only 11 per cent. survive five years—and if we exclude cancer of the breast and uterus, a mere 6 per cent survive?

Surely this cannot be true. The efforts that have been made and the progress achieved during the last twenty years must, we feel, have produced better results than these. Is not the truth buried under the possibly large errors of the table? It may be so: but if in reality we are obtaining better results in treatment, how is it that every year there is a considerable rise in the number of deaths, and in the death-rate from cancer?

THE CAUSE OF CANCER.

Research.—It seems to be considered axiomatic that to discover the "cause" of cancer will help us to prevent or to treat it: and that the way to do this is by "research," meaning laboratory research. This

confounds two different problems, the conditions necessary to initiate the changed cell-behaviour that we call cancer and those involved in maintaining or controlling the process once it has begun. With a simple deficiency disease — myxœdema, beri-beri, anæmia — prevention and treatment may be the same. Otherwise the discovery of the cause of a disease may enable us to *prevent* it in proportion as the cause can be avoided without inconvenience: but only too seldom does such a discovery assist *treatment.*

The discovery of the cause of a disease may enormously assist diagnosis. And laboratory research will often crown with the clarity of experimental demonstration the hard-won deductions of clinical experience. Seventy years ago our grandfathers employed cod-liver oil to cure human babies suffering from rickets—rank "empiricism." Innumerable laboratory analyses failed to show any difference between this substance and olive oil or cream, so that many clinicians took the analyst's word for it and agreed that there was no difference. But now when we use cod-liver oil to cure rickets in baby rats, that is "science."

In the reign of Elizabeth iron was used for anæmia, oranges for scurvy, quinine for malaria and mercury for syphilis. The discovery of the causal organisms of the two last did nothing for treatment: the only material advance in the treatment of G.P.I. was due, not to the discovery of the treponema, but to the purely empirical observation that improvement often followed a fever. In the 'fifties Dr. Budd showed that typhoid was infectious, and also how to avoid it; though it needed the death of the Prince Consort to make us put our "house of office" in order. The

discovery of the causal organism has done nothing at all for treatment.

Preventive vaccination we owe to Jenner's clinical observation. It has so completely eradicated smallpox that few of those now in practice have encountered a case: yet the causal virus has not yet been identified—or has it? The treatment of hydrophobia is another application of the same principle during the long incubation period: it was developed long before the causal organism was discovered. The eradication of rabies from this country was not due to that discovery, but to the "muzzling order."

The idea that animalculæ must be the cause of many diseases is centuries old. Oliver Wendell Holmes and Semmelweiss each assumed its truth and acted on it to prevent puerperal fever. In the cholera epidemic of 1848 Dr. Brittan hunted for the cause in the dust of Bristol Bridewell. Lister convinced himself that "something" introduced from without was the only possible explanation of post-operative septicæmia and had actually begun to practise "antiseptic surgery" before he or anyone had seen the "vibrios." Laboratory investigation immediately confirmed his deductions. He showed us how to *prevent* streptococcal infection; but the discovery of the causal organisms did nothing to help treatment of the established disease, apart from providing an antiserum: we had to wait seventy years for the sulphonamides.

It is true, of course, that the discovery of causal organisms has given us about a dozen antisera, and preventive vaccination for about the same number of diseases. Beyond this how little has it helped treatment! Look at Figure 7 in which the death-rate for respiratory tuberculosis is shown in a graph. The straight line demonstrates a uniform rate of decline

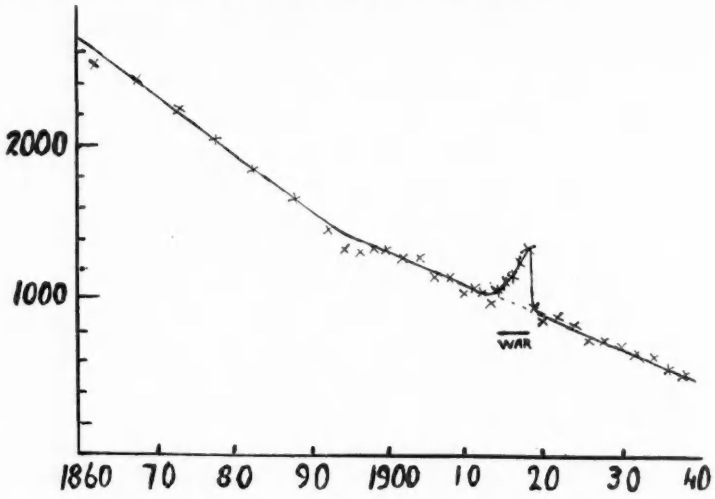


FIG. 7.

England and Wales. Respiratory Tuberculosis. Annual death-rate per million living.

during nearly a century, broken only by a sharp rise during the Great War and resumed after that as though it had never been. Perhaps the decline has been a little *less* rapid since about 1900 when sanatorium treatment and tuberculosis clinics were developed. But as far as we can see from this graph neither the teaching that phthisis is infectious, the discovery of the causal organism, the introduction of tuberculin nor, indeed, any subsequent improvement in treatment has had the very slightest beneficial influence on the death-rate.

Theories of Cancer.—There appears to be no limit to the number, nebulosity or indeed silliness of opinions put forward. Most of them have this in common that they offer us no help at all in the matter of treatment, nor even as a rule any practicable suggestions for prevention. Even if, for example, the theories of the "back-to-nature" school could be substantiated,

reversion to savagery is no more a practicable method for controlling cancer than the "Brave New World" plan of euthanasia for everybody at seventy. Happily the available evidence exonerates all the material blessings of civilization, except perhaps longer life itself, from any part in the causation of cancer. Again, supposing it were shown (against all present evidence) that heredity is important. A woman marries at twenty-five, and at fifty-five, when she is already a grandmother, develops cancer: *que faire?*

The theories of "fœtal rests" and of "tissue-tension" are incapable of demonstration and lead us nowhere. If lymph stasis causes cancer, why do we not see it with elephantiasis? And if intestinal stasis is responsible for this among all other human ills for which it is blamed, can the *Mens conscia recti* school explain why the commonest first symptom of bowel cancer is the onset of constipation previously absent? Two recent books indict respectively the use of gas-fires, and the consumption of fat contrary to the Levitical prohibition. Obviously it is only a matter of time for the blame to be laid on bananas, wireless, contraception or the diminished consumption of beer!

Fortunately we have to treat patients, not diseases. It matters little, therefore, that we have no theory at all—nor even that we have a totally wrong theory, provided we are ready to look at the matter as a whole and do not focus our attention entirely on a single, isolated aspect of the subject.

Precancerous Conditions.—Cancer may develop in tissues subjected to long-continued irritation. The irritation may be dermatitis, seborrhœic, arsenical or "varicose-vein"; it may be a broken tooth, syphilitic leukoplakia, a clay pipe, or betel-nut chewing. But we must not make too much of skin cancer. It accounts

for only 3 per cent. of all cancer, and differs from all other cancer in that the bulk of the deaths come in extreme old age (Fig. 5): and the skin is obviously subjected to irritations both in kind and degree that are not comparable with conditions affecting other tissues.

Gall-stones are common, often symptomless: few of the patients develop cancer of the gall-bladder. But 80 per cent. of cancerous gall-bladders contain calculi, and it is said that pebbles introduced into the gall-bladder of a guinea-pig lead to cancer. On the other hand, kidneys and bladders containing calculi are not specially prone to malignant disease. Peptic ulceration is common, yet gastric ulcers seldom become malignant and duodenal ulcers practically never. I was taught that irritation from corsets accounted for cancer of the breast: the "explanation" has gone with the corsets.

With all these conditions we feel there is something missing. The incidence of cancer is very low. Can it be that the only importance of the irritation is to determine the *site*, when a cancer is due to develop somewhere or other? Irritation from soot, tar and paraffin, and from X-rays and other rays requires separate consideration: and burns, including the Kangri cancer of Kashmir, should probably be included with these.

In many of the conditions just mentioned papilloma precedes cancer. In the bladder and rectum papillomata are not common, but frequently become malignant: though they account for only a small proportion of cancers in these sites. In Egypt bilharzia is a common cause of papillomatosis, so we may claim it as a "cause" of cancer. With us a rare form of family hereditary papilloma of the rectum almost uniformly goes on to cancer. But since we know

nothing of the ætiology of papillomata in this country, the observation that they are frequently precursors of cancer does not help us to the cause of the cancer.

A large proportion of the women with dysphagia-with-anæmia develop cancer of the œsophagus, though usually not in the region where the lesions of the former condition are obvious. But if anæmia is a factor in cancer, why has the disappearance of chlorosis not produced an improvement? Men are subject to anæmia and far more than women to cancer of the œsophagus; but in them there is no apparent relationship, nor do they get dysphagia with their anæmia. There must be some other factor (? endocrine) to account for the relationship in women.

Tar.—Chimney-sweeps' cancer has been recognized for sixty years, and mule-spinners' for half as long: but there has been very little change in the mortality from cancer of the scrotum. We realise, however, that soot, tar, and certain oils contain something capable of producing papilloma and even cancer when applied to the skin—that is, of actually initiating the cancerous process. The truth of this has been confirmed by laboratory experiment: and a whole series has been synthesized of new organic bodies, the benz-pyrenes, possessing this carcinogenic power in very high degree. The soot, tar, etc., apparently contain small quantities of these or similar bodies: and this probably also explains the tendency for cancer to develop in the scars of burns.

These discoveries might be of little interest to most of us. We saw however that cancer of the lung has enormously increased since the beginning of this century. Then it was a pathological curiosity, except among miners in the Schneeburg district, where the dust in the mines is radio-active. In 1901 it caused

ten deaths per million males, in 1931 fifty-one and in 1936 ninety! The only suggestion that fits the facts, including occupational liability, points to inhalation of dust from "tarred" roads.* The asphalt and the dust have been shown experimentally to be carcinogenic. If there is anything in this, the sooner we find some other road dressing the better!

Virus.—At least once a year we hear of the discovery of the "bacillus" or nowadays the virus of cancer, and the production of a curative serum. Yet there is no evidence at all that cancer is ever transmitted by infection.† The very absence of antibody formation is one of the chief troubles of the clinician. And virus diseases habitually take their toll early in life.

In birds there occur several tumours, of which the Rous sarcoma is the best known, that can be transmitted by means of cell-free extracts, presumably containing a virus. It is claimed that the virus has actually been identified in the ultramicroscope. It is both tissue-specific and species-specific: that is, it will produce only one variety of growth wherever inoculated and is active only in one species of bird. Assume that these tumours are of the same nature as mammalian cancers, though no mammalian virus-cancer is known. A carcinogenic agent will produce cancer in any species of animal, the type depending on the tissue to which it is applied—squamous carcinoma, columnar carcinoma, sarcoma, etc. If therefore a virus is *necessary* to cancer formation, every animal of every species must normally carry as many kinds of virus as there are kinds of cancer: which does not

* Lung cancer has, however, increased also in countries where the roads are not tarred.

† Compare, however, Dr. Markham Skerritt's paper in our first number, in which he demonstrates with copious references that "phthisis is not contagious": and Culpeper's *Treatise of the Pestilence*, in which he shows that "the pestilence is not infectious."

help much. Even the ingenious theory of Dr. Gye does not avoid this dilemma.

The Shope skin papilloma is readily transmitted, naturally or by a cell-free extract, from one rabbit to another. Such papillomata frequently become malignant, but are then no longer infective. It is unfortunate that so much experimental work on cancer has been done with sarcomata, which as we have observed form a numerically small class that differs in several important respects from the bulk of cancer.

Hormones.—In general, cancer shows no or at most a very slight and debatable hereditary tendency. But with cancer of the breast, uterus and prostate there is an incidence considerably above the average in the descendants of patients. By inbreeding we can produce strains of mice with a very high or a very low susceptibility to spontaneous breast cancer. A recent observation has rather upset the apple-cart: it is claimed that if a mouse, for example, of high-cancer strain is suckled to a low-cancer foster-mother it will later on behave in respect to mammary cancer as if it belonged to the foster-mother's strain.

The administration of large doses of œstrogen to female mice (or even to castrated males, normally immune) leads to the development of breast cancer. Indeed, fear of a similar effect can be traced in all papers on the clinical use of œstrogen. From the opposite side, pregnancy seems to activate breast cancer, and oöphorectomy has been employed empirically to control its progress. Add to this that cancer of uterus and breast have an incidence considerably earlier in life than other cancers. Is not the inference that cancer in these sites is related to the activity of the endocrines that normally produce tissue-proliferation and are

closely connected with normal growth control: and that perhaps it is an endocrine peculiarity that tends to be hereditary? A comparable observation is that one-third of the patients with Paget's disease die of bone sarcoma: this leads us to the relationship of cancer to the factors controlling calcification.

Rays.—Repeated exposure to radium or to X-rays is followed by dermatitis that frequently goes on to cancer. Even the rays of the sun, though apparently innocuous here, are held responsible for a considerable amount of skin cancer in whites in Australia and the tropics. The comparative immunity of the negro to this, and indeed to all cancer has been attributed to the protection afforded by his black skin against sunlight. In the last Long Fox lecture Dr. Chesterman reported that in the Congo the commonest sites for cancer are the palm and sole, which are not protected by pigment.

We know that one important effect of sunlight is the formation of calciferol; which can also be produced by the action of X-rays (on ergosterol). Though there is no experimental evidence that this is carcinogenic, should we question the wisdom of uncontrolled ultra-violet light baths and high-vitamin diet for adults?

Calciferol is essential for normal growth, calcification and the healing of wounds and ulcers. It is exactly this latter property that has established the reputation of cod-liver oil and sunlight in tuberculosis. We are all, it seems, inoculated with tubercle early in life: the development of the disease is evidence of inadequate calciferol. We may use the phthisis death-rate of a community or nation as a measure of the general hygienic standard, that is, healthiness: but more than this, we may use it as a measure of calciferol utilization.

Now there does appear to be a direct antithesis between phthisis and cancer. It is not merely that even in later life phthisis is almost an insurance against cancer. The reason for the relative immunity of the negro to cancer is claimed to be exactly the reason for his liability to phthisis. And in Table II we observed that in this country for the last fifty years the sum of the death-rate from the phthisis and from cancer is constant. In other words, it is suggested that increased healthiness, as measured by the phthisis death-rate, is related to increased cancer not simply because more individuals live into the cancer ages, but directly, the factors that enable us to defeat phthisis actually promoting a tendency to cancer.

Summary.—All this would amount to very little if these observations were entirely unrelated. We have the benz-pyrenes, with great power of producing pathological tissue proliferation, and demonstrably carcinogenic. Secondly, œstradiol, normally concerned in tissue proliferation and at least experimentally capable of initiating cancer. And thirdly calciferol, normally necessary for tissue proliferation, and if we accept somewhat oblique evidence perhaps related to carcinogenesis. And *these substances are chemically closely related.*

Whatever view of the origin of cancer we adopt it must agree with the facts: the incidence and general features of cancer are very similar throughout the whole civilized world, and among nations of the same cultural standards as our own practically identical. In this country the townsman is as well off as the countryman, and the well-to-do better off than the poor: so that there is no advantage in an open-air life, hard work or plain or insufficient food. After thirty-five years the incidence of cancer doubles with each decade

of age. And all over the world, since as far back as records go there has been a steady increase in the cancer death-rate.

Is it merely by chance, since two-fifths of all women's cancer starts in uterus or breast, that the *total* incidence of cancer in the two sexes is practically identical ? Or that in one country there is a very high incidence of cancer of one organ, in another of cancer of another organ, yet the total incidence is the same ? It seems essential that there is a " general control " : and it is suggested that this is related to excess endocrine activity, possibly perverted, possibly redundant to the later years of life.

We can, if we take the trouble, avoid exposure to soot, tar, oils and X-rays. But this by itself will have no appreciable effect on the bulk of cancer. We cannot expect to prevent cancer if, as is suggested, its origin is bound up with just those factors that render the individual and the race healthy, virile and long-living.

CONCLUSION.

" Where there is no hope, there can be no endeavour."—*Johnson.*

Immunity.—A portion of a cancer may be transplanted, say from one mouse to another, and continue to live and grow as a cancer in the second. Incidentally, after several such transferences the cancer shows a greatly increased power of survival and growth. In this way a cancer may increase to many hundreds of times the size of the whole mouse in which it originated and remain alive and vigorous years after that mouse has perished. But if it is transplanted simultaneously into a number of mice it will not " take " equally in all. In some it grows readily, in one or two perhaps not at all : and perhaps in others after apparently beginning

to grow it disappears. We now find that the mice of the third group are very resistant, perhaps completely resistant, to another implantation of the same cancer (and sometimes of other similar cancers): they have developed an immunity. What is more, their serum will confer a certain degree of immunity on other mice, evidence of the production of an antibody.

Unfortunately this method cannot be applied to spontaneous cancer: metastases often grow more rapidly and are more resistant than the primary growth. Whatever antibodies the patient produces they are ineffective. But there is often evidence of *some* antibody formation: (*a*) fibrosis, with destruction of cancer in permeated lymphatics and (*b*) tendency of blood-borne fragments to perish. Only very, very rarely does spontaneous recovery occur: but it has been recorded sufficiently often to place it beyond all doubt.

The occurrence of two or even three entirely separate cancers in the same patient, either simultaneously or successively, has been noted on many occasions. But it is still a rare event, far less common than the "chance expectation." Even when there are numerous papillomata in the rectum, only one becomes malignant. (The case of cancer in both breasts or both tonsils is not under consideration.) Yet there are at any time thousands of persons alive who have had a cancer removed successfully, and who might be expected to have as good a chance as others to develop cancer elsewhere. It appears as if the occurrence of one cancer led to the inhibition of cancer formation, even after the original growth is removed: but there is very little resistance to the original growth if a portion has been overlooked, or even if it is "implanted" accidentally during operation. Though slender, there

is *some* evidence of a natural tendency to recovery from cancer.

It is manifest, of course, that as matters stand we must continue to encourage patients to seek early treatment: and continue also to develop our present methods of treatment by surgery and radiation. But it does not appear probable that we shall by these means do much to improve the position. The National Radium Commission scolded Bristol for years for its comparative lack of enthusiasm for radium: but it is at least arguable that the local judgment was dispassionate and essentially sound—in only a small field are the results of radium and X-ray treatment anything like as good as the surgeon's.

Nor would I suggest that we should abandon any research. Our national expenditure on this is really ridiculously small. But it should be possible to apply our efforts to greater advantage. We do not require more statistics—we swim already in an ocean of statistics: nor is it easy to discern any advantage in two bodies independently compiling, as now, statistics of the results of treatment of the same set of patients. In the laboratory nearly our whole effort is directed to the (probably sterile) discovery of the cause of cancer: in pharmacology, the field of laboratory research most abundant in fruit for the clinician, nothing is attempted.

Neither as a nation nor as a profession are we sufficiently concerned about cancer. Yet each year the Registrar-General records that the figures of deaths from cancer are the highest ever recorded: "The death-rate for males in 1936 is 109 per cent. higher than in 1901–10." The medical student and the hospital surgeon do not see the whole of cancer. The general practitioner, the Public Assistance officer and

the District Nurse know how often death from cancer implies a protracted and hopeless agony.

The difficulty is in great part economic. No surgeon even could afford to confine his work to the operative treatment of cancer. Yet apart altogether from the failures of surgery and radiation there die every year from cancer many thousands for whom these methods offer nothing at all. Working only as a "side-line" and with this unpromising material, a very few optimists, assuming that cancer is a constitutional disease and should be treated by assisting the feeble natural defences, have achieved at least considerable progress. Suppose it were made possible for a few—as a start, even one or two—of those with a wide practical experience in the treatment of cancer patients to devote to these their whole time and attention, unhampered by a pharisaical orthodoxy or *rebus angustis domi :* one cannot help feeling that not only could very much be done to relieve these "miserable objects," but we should bring substantially near the conquest of this grim adversary.

SUMMARY.

1. Cancer in this country accounts for more deaths each year. Not only is the death-rate increasing, but the rate for each age-group.

2. Nearly half all deaths from cancer occur before sixty-five : cancer accounts for one-fifth of all deaths between thirty-five and sixty-five. Of all who reach thirty-five one in six dies of cancer.

3. The proportion of those who are cured by surgery or radiation is small.

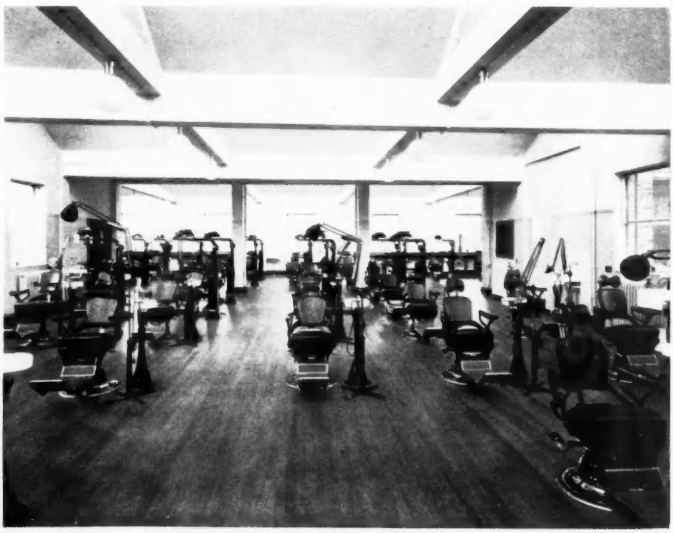
4. Deficiency diseases apart, the discovery of the cause of a disease often does nothing to assist treatment of patients.

5. Cancer can be caused by rays, by bodies of the benz-pyrene group, or by overdoses of œstrogen: these are both chemically related to calciferol, which can be produced by the action of rays.

6. It is suggested that the cause of cancer is constitutional, related to endocrine activity, and integrally connected with factors necessary for health and long life; that we can expect little improvement from education of the public, development of surgery or X-rays or research into the cause of cancer; and that future advances should be sought in pharmacology and in medical treatment.

PLATE I

UNIVERSITY OF BRISTOL DENTAL HOSPITAL



CONSERVATION DEPARTMENT

UNIV. OF MICH.

UNIVERSITY OF BRISTOL DENTAL HOSPITAL AND SCHOOL.

QUIETLY and with a minimum of preliminary advertisement, the Bristol Dental Hospital has been established. The manner of its foundation is new, at any rate in Bristol, because it owes its existence entirely to the University which is responsible for the cost of erection and its future maintenance. The need for our Dental Hospital is primarily educational. For many years there has been a flourishing Dental School in Bristol, which began in the days of University College, and has thriven even more vigorously since the advent of the University. But the facilities for practical work were only exiguously furnished at the Royal Infirmary and General Hospital. Long before a Dental Board for the United Kingdom existed the Dean of the Medical School (Professor Fawcett) and Messrs. Ackland and Dowling (Dental Surgeons at the Bristol Royal Infirmary and Bristol General Hospital respectively) had realized that a Dental Hospital was essential to the satisfactory teaching of Dental students in Bristol. When the Dental Board was founded in 1920 it supported the idea with all its power, and in the end with a considerable capital grant towards the building.

Professor Fawcett describes the development of the Dental School in Bristol thus:—

When he was first appointed Professor of Anatomy there was a very small entry of dental students, not more than one or two per annum. After he became Dean of the Medical Faculty he made a practice of asking the men as soon as they qualified if they could suggest improvements in the provision of teaching. About the year 1906 the answer of the newly-qualified men was immediate and unanimous to the effect that a mechanical laboratory was needed where prosthetics could be taught properly. At that time the pupillage system was in vogue, fees of varying amounts were charged for two years' apprenticeship to private dental practitioners, and in some instances the teaching of prosthetics was very poor. The *General Medical Council recommended that the training in prosthetics should be given in an institution, and Professor Fawcett told Mr. Ackland and Mr. Dowling (Honorary Dental

* The responsibility for Dental education has now passed from the General Medical Council to the Dental Board.

Surgeons to the Bristol Royal Infirmary and Bristol General Hospital respectively) that it was proposed to make compulsory under the regulations for the Bristol B.D.S. and L.D.S. that prosthetics should be studied in the University Mechanical Laboratory or an institution recognized for the same purpose. To his gratification they at once agreed, and forthwith discontinued taking private pupils. In order that there might be no complaints from local practitioners of undue competition a fee of 100 guineas was suggested. There was some difficulty in getting the matter through Council. Mr. James Arrowsmith opposed the scheme ; he would listen to nothing, and Council rejected the proposal. Professor Fawcett writes : " I went to Arrowsmith next day and as usual got frightful abuse from him (which I knew he did not really mean). When he at last consented to listen, he said : ' Why, it is a paying proposition. I will bring it up myself at the next meeting ! ' He did so, and it went through."

The Mechanical Laboratory was formed, and from the start it carried out the work of the Infirmary Dental Department. About this time Professor Fawcett addressed a meeting of the Association of Dental Teachers of the North, held in Manchester, and his proposal that private pupillage should be abolished was carried unanimously. He found the Dean of the Birmingham Dental School also in favour of this policy. The outcome of these discussions was that the work of the Dental Mechanical Laboratory was placed on the same footing as that of the Dissecting Room or Physiological Laboratory, and the students were charged an annual fee. Since then the Laboratory has never looked back, and in a short time the General Hospital brought its dental work into the scheme.

At the beginning there was some difficulty in providing training in gold work, and it was complained that in this respect the University training was inferior to that given by the private dentist. The Dean of the Royal Dental Hospital in London explained how this difficulty was met in his Hospital by allowing every student to make gold plates on the cast of the mouth, after which the gold was assayed and returned to stock. This simple method was at once adopted in Bristol.

Meanwhile, Mr. Ackland and Mr. Dowling were lamenting the absence of a Dental Hospital in Bristol. Professor Fawcett brought up the matter before the University Buildings Committee, pointing out that it was a very urgent and important question. Most, if not all, of the members agreed, but there was no money at hand. But the Dental Board, recently established, receives a large income from registration fees, which

allows funds to be given to Dental Schools for the provision of scholarships and buildings and the improvement of teaching.

The Dental Board inspected the teaching arrangements in Bristol, and reported that they were unsatisfactory. Thereupon the Committees of the Bristol Royal Infirmary and Bristol General Hospital agreed to send their patients to a Dental Hospital if and when established. Various suggestions for opening such a hospital were considered, amongst them one for the conversion of Canynge Hall to this purpose, which was approved by the Dental staff. To Professor Fawcett's great disappointment the situation of Canynge Hall did not meet with the approval of the Dental Board, and his retirement from the office of Dean came before he could realize his ambition and see a Dental Hospital in working order in Bristol.

It fell to the lot of Professor Brocklehurst, who succeeded him as Dean, to help in the final stages. He has summarized these stages in the opening paragraphs of the following account. Dental patients have been treated and dental students have obtained their clinical practice for many years at the Bristol Royal Infirmary and the Bristol General Hospital. While treatment has been carried out without difficulty, the arrangements for teaching have been unsatisfactory; the accommodation and facilities at the two institutions are not as good as would be expected in a single hospital, and the splitting of students and cases into two units has meant wastefulness. Moreover, students have had to carry out their mechanical work in a crowded laboratory at the University, and much time has been wasted travelling between the laboratory and the hospitals.

Following an adverse report on the conditions by representatives of the Dental Board in 1928, the University explored various possibilities, including the conversion of Canynge Hall into a Dental School, but for one reason or another all the suggestions brought forward were deemed unsatisfactory. In 1935, however, a site in Lower Maudlin Street, opposite the Royal Infirmary, fell vacant; this was purchased by the University. With the generous assistance of the Dental Board and the active interest of the Treasurer of the University, Dr. Stanley Badock, a Dental Hospital and School has been erected on this site, to the plans of Mr. Eustace H. Button, F.R.I.B.A. The building was formally opened by Professor E. L. Sheridan, M.D.S., F.R.C.S.I., Chairman of the Dental Board, on Wednesday, 10th April, 1940.

The University now has a School where all its Dental teaching can be carried out under one roof. Hither are being

transferred the Dental out-patients from the Royal Infirmary and General Hospital, now free to use for other purposes the space taken up by their Dental Departments. The Dental Assistant-Dean, Mr. P. J. Stoy, has supplied the following account of the building :—

The complete Hospital, in its construction, lay-out and equipment, rivals any similar hospital in the country. Externally its brick façade harmonizes with that of the new building of the Eye Hospital.

The Hospital consists of ground, first and second floors. In general lay-out the dual purpose of the building, *i.e.* treatment of patients and training of students, was kept constantly in mind when the plans were being drafted. One main entrance serves for all, but patients are then diverted to one side, staff and students to the other. Close to the entrance is the main patients' waiting-hall ; here their cards are obtained and the new patients registered. The Almoner's Office is situated close to the waiting-hall for the convenience of the patients. Nearby also is the examination room and a surgery for extractions under local anæsthesia. With these arrangements patients requiring immediate treatment circulate only in a small area close to the entrance, and there is no necessity for them to go upstairs.

The remainder of the ground floor is occupied by a lecture theatre accommodating fifty and provided with an epidiascope and lantern, students' common rooms, a locker room where each student has his own large steel locker, lavatories, a staff common room and administrative offices.

The whole of the front of the first floor is occupied by the operating theatres and their associated waiting and recovery rooms. Routine extractions under nitrous oxide anæsthesia will be done in two adjacent inter-communicating rooms, and although it is anticipated that only one operating team will work, the use of both rooms alternately will mean that long gas lists can be handled expeditiously, but without hurry or discomfort to the patients. The windows of these theatres are specially thick to prevent noise entering from the street and disturbing the semi-conscious patient, and double doors prevent noises in the surrounding rooms and corridors from being heard.

A large theatre for operations needing longer anæsthesia has been incorporated, although it is unlikely that it will be much used until the Hospital has acquired beds of its own in an adjacent wing. The anæsthetic gases are obtained in the theatres by pipe lines from large cylinders in the basement, an economic method. All the theatres are air-conditioned.

At the back of the first floor is the laboratory for Dental Mechanics, holding fifty students, and various small laboratories for such associated procedures as polishing and vulcanizing dentures. This separation of procedures will, it is hoped, keep the atmosphere in the main laboratory healthy; in addition, there is a fan to circulate the air. The windows are of frosted glass of a type which throws the light well across the laboratory, and artificial lighting is provided at each working place. The benches have rubber mountings to reduce to a minimum the transmission of noise to other parts of the building. Other rooms on this floor are a library, an X-ray room and a dark room.

The main feature of the top floor is the Conservation Department, containing about fifty chairs. The lighting is excellent and comes mainly from ceiling lights facing north. For dull days or evenings general illumination is obtained from large spherical opal lights, while a special light is provided for each chair. All advanced students will have the advantage of working with an up-to-date electrical unit.

A smaller room, containing ten chairs, for prosthetic and orthodontic dentistry is situated at the front of the building. There is also a demonstration theatre with a raised gallery for spectators and a special light which can be concentrated on to the mouth of the patient, thus allowing good visibility for the students watching an advanced procedure. The rest of the top floor is utilized by the Pathological Laboratory, a mannikin room where junior students can practise on dummies, and a room for the nursing staff.

The whole building is centrally heated by mechanically-stoked boilers in the basement. A car park and air raid shelter are adjacent.

The Hospital will, it is hoped, form a valuable addition to the existing medical services in the city, and will provide facilities for the training of students at least as good as those of other dental schools.

Now the problem of maintenance remains to be settled. The funds of the University can only be used for educational purposes, yet it must be anticipated that many indigent patients will receive treatment at the Dental Hospital. The cost of their treatment cannot lawfully be defrayed out of University funds. The Dental Hospital, like the other voluntary hospitals in our city, must be supported generously by charitable contributions, and perhaps to some extent by contributory schemes.

Reviews of Books

Pioneers in Abdominal Surgery. By Z. Cope, M.D., M.S., F.R.C.S. Pp. xii., 135. Illustrated. London: Oxford University Press (Humphrey Milford). 1939. Price 7s. 6d.—This is a very interesting little essay in the history of surgery. The author passes in review each of the standard operations for acute abdominal conditions, beginning with intestinal obstruction and passing on to appendicitis, perforated gastric ulcer, and ruptured ectopic pregnancy, and describes the first recorded operation for each. A valuable feature is the excellent series of photographs, thirty-one in all, of the pioneers, derived from many countries. Naturally, Great Britain is well represented.

Physics for Medical Students. Second Edition. By J. S. Rogers, B.A., M.Sc., F.Inst.P. Pp. xiii., 304. Illustrated. Melbourne: Melbourne University Press. 1939. Price 12s. 6d.—This book should prove of great interest to all members of the medical profession who wish to extend their acquaintance with the physical discoveries and principles underlying some of the recent advances in medicine. It is also to be recommended to physicists, in particular to those engaged in the teaching of medical students, as a clear exposition of those branches of their science which are applied in medicine, together with a brief account of the applications from a physicist's standpoint. As a text-book for medical students in this country, it is too advanced, since it assumes a knowledge of elementary physics approaching that of the 1st M.B. standard. The better student, however, should find it a stimulating book to read in conjunction with a more elementary one.

A Synopsis of Surgical Anatomy. Fourth Edition. By A. L. McGregor, M.Ch., F.R.C.S. Pp. xvii., 664. Illustrated. Bristol: John Wright & Sons Ltd. 1939. Price 17s. 6d.—The fact that this book has reached its fourth edition in the seven years which have elapsed since its first appearance should be sufficient evidence that it fills a real need. A book of nearly seven hundred pages, crammed with facts from cover to cover,

can scarcely be regarded as a student's text-book for systematic study, for the average student does not like Applied Anatomy, nor does he appreciate its value and importance. This book, then, must find its chief function as work of reference or for occasional consultation. In such a capacity it could hardly be found wanting, for the range of the information contained in it is vast, the facts are presented in a simple and systematic way, and few omissions or statements open to challenge are to be found. It is curious, perhaps, to find no mention of strangulated hernia, nor of that great life-saving measure, Fowler's position, and its anatomical explanation. A brief mention of the problems connected with ascites, and the operations designed for its relief or cure might well be included. A word of warning might be given as to where the ureter is to be found after the peritoneum has been stripped back, for it sticks to the peritoneum and does not lie in the extra-peritoneal fat overlying the iliac vessels. We have seen inexperienced operators seeking it here in vain. It is interesting to see a reference to a case which seems to support the possibility of an occurrence which some might rate impossible, namely the escape of an ectopic testis down the femoral canal. Altogether a most stimulating book and full of interest: a search of its pages can hardly fail to be helpful to one in difficulty over a problem of Anatomy, whether commonplace or obscure. The new edition should enhance a reputation already earned by its predecessors.

Blood Transfusion. By V. H. RIDDELL, M.D., F.R.C.S. Pp. xiv., 370. Illustrated. London: Oxford University Press (Humphrey Milford). 1939. Price 21s.—This book is the first publication which reviews the subject of Blood Transfusion since 1922. During this time an immense bibliography has collected, and the long list of references at the end of each chapter shows the wealth of material that has been consulted. Two-thirds of the book is devoted to an account of the author's personal experience, and where alternative methods in the practical aspect of blood grouping and transfusion exist, the most practical procedure is described to the exclusion of the rest. Inevitably this will lead to the personal criticism of certain methods of technique. In this case, however, the procedures have been so simplified, the methods so fully described and every step so beautifully illustrated, that even those experienced in the art of blood transfusion will acquire many new points of view which will be of ultimate practical value. No aspect of the indications,

complications, dosage and rate of administration is omitted, and the old standing custom of transfusing a patient with the empirical quantity of one pint is finally relegated to the past. The latter part of the book discusses the modern methods of technique available for collecting and delivering blood. The therapeutic value of whole, citrated and stored blood is considered, except that the subject of stored blood is of necessity incomplete. This is undoubtedly the most complete work available, and it can be confidently recommended to all members and students of the profession, and especially to those physicians and surgeons who are personally concerned in the performance of blood transfusion.

Common Skin Diseases. Fifth Edition. By A. C. ROXBURGH, M.A., M.D., B.CH., F.R.C.P. Pp. xxxi., 416. Illustrated. London: H. K. Lewis & Co. Ltd. 1939. Price 15s.—"Good wine needs no bush," and little recommendation is needed for a text-book which has reached its fifth edition in seven years. The present edition includes several new illustrations in addition to details of methods of treatment which have come into general use since the last edition, one of the most notable being the use of emulsifying bases. X-ray dosage is now given in *r*-units as well as in pastilles. *Common Skin Diseases* has reached the established place which was predicted for it in 1932, and is probably the most popular smaller work on dermatology in use at the present time. It can be recommended without any hesitation to both students and practitioners.

The Psychological Aspect of Delinquency. Edited by G. de M. Rudolf, M.R.C.P., D.P.M., D.P.H. Pp. 64. London: Baillière, Tindall and Cox. 1939. Price 2s. 6d.—In 1938 the Bath and Bristol Mental Health Society arranged a course of lectures on the Psychological Aspect of Delinquency, and these are now reproduced in pamphlet form. Each of the six talks was given by a different lecturer, three of them Bristol doctors. The address by the Director of the Tavistock Clinic on "the Magistrate and Delinquency" is outstanding. The booklet suffers from a lack of cohesion, the treatment of the subject is elementary and much is left unsaid. In fairness to the organizers of the course it should be pointed out that each talk was followed by an hour's discussion, when many problems receiving scant attention in the lecture could be developed. Each address by itself is quite readable,

but the absence of an index makes cross-references difficult. This book would be of interest to anyone wanting to obtain a superficial knowledge of the subject, and it may well prove thought-provoking to those who are accustomed to the older methods of dealing with delinquents.

Massage and Remedial Exercises. Fourth Edition. By NOEL M. TIDY, C.S.M.M.G. Pp. xii., 458. Illustrated. Bristol: John Wright & Sons Ltd. 1939. Price 15s.—Some books are positively inviting to read, some only to peruse, while others are frankly for reference. Tidy's *Massage and Exercises*, now in its fourth edition, comes under the third category. It is too well known among students of remedial exercises to need any recommendation. At first sight the volume is bewildering; there is so much crowded into it, the type and illustrations being on the small size. For those for whom it is written, namely students of the C.S.M.M.G., it is invaluable as giving the physical exercises for every condition in which that treatment can be of any use. Notes of other physical treatments, such as electricity and light, are added where applicable. A page on gas poisoning brings the book right up to date.

Physical Signs in Clinical Surgery. Seventh Edition. By HAMILTON BAILEY, F.R.C.S. Pp. xii., 310. Illustrated. Bristol, John Wright & Sons Ltd. 1940. Price 21s.—There is no disparagement meant to the text of this book, when we call attention to the great value of the very numerous illustrations. To glance through these is by itself an excellent education in clinical surgery. In the present edition more and better pictures have been introduced, and another new feature is a series of footnotes explaining who the various surgeons are (or were), whose names have been given to signs or diseases. Altogether an excellent book, both for students and for doctors. It is very well printed and published, as one would expect from the famous house that has turned it out.

Synopsis of Surgery. Eleventh Edition. By E. W. HEY GROVES, M.S., M.D., B.Sc., F.R.C.S. Pp. viii, 714. Illustrated. Bristol: John Wright & Sons Ltd. 1940. Price 17s. 6d.—All that is necessary in reviewing a book so long and deservedly popular is to indicate the improvements shown in this new edition. These are valuable. The treatment of fractures has been revised, and brought into line with modern specialist

methods, and in particular with those associated with the name of Bohler of Vienna. Another greatly improved section is that dealing with the operative treatment of cleft palate, where the older methods have been replaced by those of Veau, Gillies, Wardill, or Denis Browne. The Bristol School of Medicine and Bristol printing and publishing have both enhanced their reputation by the success of this book.

The Abdominal Injuries of Warfare. By G. GORDON-TAYLOR, O.B.E., F.R.C.S., F.R.A.C.S. Pp. vii., 87. Illustrated. Bristol: John Wright & Sons Ltd. 1939. Price 10s. 6d. —This book might well be read with advantage by all surgeons likely to have to deal with abdominal war wounds. Those who have dealt with these conditions know full well that there are many important details in the operative technique which do not arise in ordinary abdominal surgery. The author has not set out to write a treatise on the subject, but offers, as he says, the book as a *companion guide* to the illustrations. These illustrate, well and clearly, many important points in surgery of this kind, and the text has much excellent advice to offer as to the type of case it is wise to leave alone, those on which transfusion, which has improved on the results of the last war, should be done, and those in which there should be no delay in treating operatively. He also emphasizes the necessity of speed; the "surgical tortoise," as he rightly says, is not conducive to living results, and this without doubt will be confirmed by all surgeons who have had to deal with these cases in large numbers. Transfusion, thorough search of the gut from end to end, gentleness and speed in handling with the least possible exposure of the organs are the methods to be employed if the patient is to survive.

Fractures and other Bone and Joint Injuries. By R. WATSON-JONES, B.Sc., M.Ch., F.R.C.S. Pp. xii., 723. Illustrated. Edinburgh: E. & S. Livingstone. 1940. Price 50s.—Watson-Jones has produced a book in which the whole subject of fractures and allied bone and joint conditions is considered with great thoroughness and clarity. Free use of illustrations and X-rays has amplified the text and added to the interest. The book opens with ten excellent chapters on general questions connected with fractures and their treatment, chapter three on adhesions and joint stiffness being a particularly fine section. Mr. Watson-Jones recommends the

use of a leather boot to be worn over the plaster cast in place of the usual walking iron. This would, of course, involve a great increase in expense. The chapter on fractures of the dorsolumbar vertebrae is beautifully classified and illustrated where the low dorsal and lumbar vertebrae are concerned, but unfortunately the more difficult upper dorsal region is passed over with only a short paragraph and no illustrations. The chapter on low back strain and sciatica is a very helpful inclusion. As the author truly says, there have been innumerable methods designed for introducing Smith-Peterson pins into a fractured neck of the femur. His method does not appear the best. Perforation of the femoral artery in using the Hey Groves apparatus for this purpose can only be accounted for by a lapse in the elementary precaution of feeling for the arterial pulsation, which in the abducted leg is always medial to the point overlying the centre of the femoral head. There is an occasional jarring note provided by an overstatement, as for instance when a rather unpleasant-looking guillotine amputation is shown in illustration 107 with the caption "A result of skeletal traction." No method of treatment is free from its tragedies, most of these occurring in incompetent hands. After making out a well argued case for traction through the lower third of the tibia, confusion is spread by nearly every illustration showing traction through the os calcis as is the more usual practice. This contribution to the literature on fractures has the great attribute of being freely and excellently illustrated and having a text which is clear and concise, and in which a logical reason is always given to satisfy the enquiring mind. This book will undoubtedly be widely and profitably read.

Thomson and Miles' Manual of Surgery. 2 vols. Ninth Edition. Edited by A. Miles, M.D., LL.D., F.R.C.S., and the late Sir D. Wilkie. Vol. 1 pp. 656, Vol. 2 pp. 715. Illustrated. London : Oxford University Press (Humphrey Milford). 1939. Price 42s.—Not much need be said to commend a book which has survived for thirty-five years, and is the recognized exponent of the great Edinburgh school of surgical theory and practice. This edition comes from the hand of no less than twenty-eight contributors, and was planned—almost his last public service to the profession—by the late Sir David Wilkie. The illustrations have been overhauled and greatly improved, and it is claimed that the book has been extensively altered and brought up to date, and in part re-written. Unfortunately, the revision of these older text-books is seldom thorough enough.

We doubt if a student would get much credit in an examination if all he had to say about the treatment of pneumococcal peritonitis was, as advised here, to "open the abdomen" (which is useless), to "drain" (which is pernicious) and to "combat septicaemia" (which is vague). The iodine-in-milk treatment for actinomycosis is not noticed, nor the salvarsan treatment for anthrax. A good, practically new, section is contributed by Norman Dott on neurological surgery, and well demonstrates the great progress that has been made in the diagnosis and treatment of injuries and diseases of the brain.

The Early Diagnosis of the Acute Abdomen. Eighth Edition. By Zachary Cope, M.D., M.S., F.R.C.S. Pp. xv., 257. Illustrated. London: Oxford University Press (Humphrey Milford). 1940. Price 10s. 6d.—The acute abdomen is one of the great opportunities that come the doctor's way, for on his prompt decision life often depends. To ensure a right diagnosis he should read, mark and inwardly digest the contents of this book. They represent the compressed knowledge of an eminently sound surgeon of ripe experience. The author writes in a good didactic style, avoids digression, and gives to each of the various types of emergency a well-proportioned space. Sprinkled throughout the book are helpful classifications of symptoms, comparative tables of differential diagnosis and first-rate diagrams which are as lucid and telling as any the reviewer has seen in surgical works. Constant reference to this handy and inexpensive volume would enable the resident to get far more value out of a hospital appointment, and would help the general practitioner in his vital, but less frequent contact with the acute abdomen.

British Red Cross Society Notebook. Second Edition. Edited by St. J. D. Buxton, M.B., B.S., F.R.C.S. Pp. iv., 100. Illustrated. London: Oxford University Press (Humphrey Milford). 1940. Price 2s. 6d.—This notebook is a welcome addition to the Library at this particular time. Its size is not unwieldy and at the same time gives plenty of space for note taking. The diagrams are clear and boldly drawn, three essentials being well portrayed: (*a*) The Gross Anatomy. (*b*) Common Types of Fracture and Dislocation. (*c*) The First Aid Treatment of Serious Hæmorrhage. The Anatomical diagrams show at a glance the subject portrayed and leave the student space for marking in the names of the various parts. Unlike the official first aid text-books, this treats the subject

of circulation and hæmorrhage in its proper place—namely first. Students attending a course of lectures will find this book invaluable for systematic note taking, and for reference purposes.

A Pocket Medical Dictionary. Fourth Edition. By L. Oakes, S.R.N., D.N., and T. B. Davie, M.D., M.R.C.P. Pp. xx., 409. Illustrated. Edinburgh: E. and S. Livingstone. 1940. Price 3s. 6d.—For those who have occasion for a handy little volume of this type this can be thoroughly recommended. The information is concise and accurate, and spelling and definitions will serve those who require help in these directions.

An Atlas of the Commoner Skin Diseases. Second Edition. By HENRY C. G. SEMON, D.M., F.R.C.P. Pp. xii., 272. Illustrated. Bristol: John Wright & Sons, Ltd. 1940. Price 42s.—A second edition of this admirable atlas has just been published. The book has been brought up to date, and the colour of some of the illustrations has been in some instances improved. It is a most valuable and practical handbook well worth the price charged. Would it be presumptuous to suggest that *Pellagra* is really a not uncommon disease in the British Isles, and that it frequently goes unrecognized from unfamiliarity with its appearance ?

An Index of Treatment. Twelfth Edition. By Sir ROBERT HUTCHISON, Bart., M.D., LL.D., F.R.C.P., and REGINALD HILTON, M.D., F.R.C.P. Pp. xv., 996. Illustrated. Bristol: John Wright & Sons, Ltd. 1940. Price 42s.—The new edition (twelfth) of Hutchison's *Index of Treatment* is most welcome. Several of the articles have been entirely re-written and a few new ones introduced, with the result that the work has been brought thoroughly up to date. Wright's Index Series in Medicine and Surgery really do, as the publishers claim, "form a complete reference library for the busy practitioner."

Ear Model. Designed by A. J. WRIGHT, M.B., F.R.C.S. Illustrated. Bristol: John Wright & Sons, Ltd. 1939. Price 21s.—This ingenious model enables the student or practitioner to familiarize himself with the appearances of the normal and pathological tympanic membrane. It has been placed in charge of the Librarian and is available for use by any student or practitioner who brings his own auriscope.

Editorial Notes

The British Red Cross Society in Bristol.

For some years after the last war the work of the Bristol Branch of the Red Cross, under the direction of Alderman F. Sheppard, was confined to the relief of ex-service men. But three years ago it was decided, in view of the possibility of another war, that the activities of the branch should be extended. A meeting was summoned by the Lord Mayor, Alderman Moon, at which it was decided, at the request of the A.R.P. authorities, to start training courses in A.R.P. and First Aid. In the following three years over 4,000 persons took these courses of training, and received the Society's First Aid and Anti-Gas certificates. The Society also realized how essential it was that Bristol should have men and women more intensively trained in ambulance and nursing duties to meet the demands for service with the Forces or in hospitals receiving casualties—military or air raid—organized by the Ministry of Health. Three men's detachments and six women's were formed, and now number over 500 trained personnel. When war began in September, it was immediately evident that much larger premises were required if comforts for the troops at home and abroad were to be made, stored and distributed. Through the kind offices of the Chairman of the St. John Ambulance Brigade eminently suitable premises were made available on the first floor of a

large building in Lewin's Mead. It was a great honour and pleasure to the Headquarters Staff of the Society when, on the 18th November, H.M. Queen Mary not only personally opened the new premises, but herself named them "Queen Mary House." Queen Mary House now accommodates several organizations, working side by side, in close and happy co-operation. Training courses and examinations in Anti-Gas, First Aid and Home Nursing and Detachment meetings and practices go on daily. Working parties of the members of the Women's Voluntary Services meet each morning and afternoon under the direction of Mrs. Herbert Thomas to make the garments, bandages and dressings required by the authorities for the hospitals. Many comforts have also been despatched to Polish refugees, and to the Finns. In another part of the building Lady Wraxall, Regional Officer for Hospital Supplies, carries on the great task of receiving from Headquarters material in bulk, which is distributed to work parties in the four counties of which Bristol is the centre, and receiving and distributing the finished articles received from the many work parties. A Hospital library, under Mrs. Charles Budgett, collects and distributes books and magazines to all the hospitals in and around Bristol where sick troops are received. Postal messages to relations in Germany are despatched from the office, and, in due course, provision will be made for a Prisoners' of War Parcel Department Though no Air Raid or Overseas casualties have yet been received in Bristol, the Red Cross has already been called upon to give help to the troops in training stationed in this area, who have been suffering severely from the exceptionally hard winter weather. At the beginning of February the military authorities asked the Red Cross to assist in equipping and staffing St. Peter's

Church Hall, Henleaze, as an extension of the hospital at Horfield Barracks. In three days' time the hospital was ready to receive forty cases, and ever since it has been dealing with a steady stream of sick men. Quite recently this branch of the Society has also been asked to help in the matter of comforts for the Medical Posts scattered all round Bristol, which have all had to be extended during the influenza epidemic. Over 50,000 articles have, in the last five months, passed out through Queen Mary House, and the Society hopes to continue to give adequate help to every call made upon it, whatever the future may bring.

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Influenza.

WHEN a strange disorder almost simultaneously attacks nearly every inhabitant in a region, it is easy to understand how an astrological age ascribed the visitation to something flowing in from a malign comet. The epidemic that has recently visited us comformed closely to the usual main features: the attack rate was extremely high; children were only mildly affected; onset was very sudden, so that the victim who felt quite well at midday would be shivering by tea-time; and severity of symptoms and frequency of complications increased with the progress of the epidemic. In actual symptoms it was rather peculiar. The initial attack was short and often mild; following this came laryngitis and tracheitis, frequently with complete aphonia; and after five to eight days a more severe bout of fever, coryza and malaise. Many, therefore, maintained that they had had two attacks or had got up too soon. Others did not observe the initial fever and declared that the hoarseness came before the influenza.

Nothing is more remarkable about influenza than the manner in which each epidemic has its own pattern of complications. Thus with one we see bronchiolitis, with another appendicitis, with a third laryngitis, with a fourth mental depression: our recent visitation provided in the main only the common sequelae of infections of the ear and nasal sinuses, perhaps unusually numerous and severe.

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New President of the Queen Victoria Jubilee Convalescent Home.

MR. F. C. LUKE, J.P., was unanimously elected President of the Convalescent Home at a Governors' meeting, held on 26th April, 1940, in succession to Mr. R. H. Warren, who has resigned on account of ill-health. Mr. Luke has been a valued member of the Visiting Committee for a number of years and one of the two Vice-Presidents. Mr. Warren, we are glad to hear, has consented to remain Honorary Treasurer of the Home. It is interesting to note that the Fortieth Anniversary of the Home was celebrated this year. Its financial position is most enviable and exceptional; at the close of 1939 there was an excess of income over expenditure amounting to £410. This institution illustrates that one voluntary charity, at any rate, in Bristol does not need to be in debt in order to prosper.

Obituary

JULIA WOOLNOUGH GROSS.

Miss Julia Gross died at the age of 74 at Ashburton, on 8th January. Her death recalls a long life spent in nursing at the Bristol Royal Infirmary, where she and her sister had worked for thirty-three years. Many generations of students and residents owed no small part of their training to the teaching of Sister Fanny and Sister Julia Gross. The two sisters were daughters of Mr. W. Gross, of Cheyne Square, Bury St. Edmund's.

They entered the nursing staff of the Bristol Royal Infirmary on the same day, 17th March, 1888, Fanny being aged 26 years and Julia 22. By September, 1892, Julia was made " Charge Nurse " of Wards 17 and 18, and she remained Sister of those wards until her retirement in 1921. In March, 1891, Fanny was put in charge of the operating theatre and was Theatre Sister until 1912, when she took charge of the Casualty Room.

They were women of unusual background and education for the times in which they took up nursing, and they were absolutely devoted to their profession. Professor James Swain writes :—

" Sister Julia Gross began her career in the days before the training of nurses had taken in the fuller methods of modern times. She came to the Royal Infirmary with her sister (' Sister Fanny,' who died a year ago) about 1885, when the clothes in which the patients arrived were kept in boxes under their respective beds and when there were only two baths for all the patients in the main building.

" In due course she attained the position of Sister in the men's surgical wards, and while others came and went, Sister Julia continued at her post at the Royal Infirmary until she sought a well-earned rest and retired, with her sister, to Ashburton, where they lived for the remainder of their lives in mutual happiness and content.

"Sister Julia was of a cheerful disposition, and her kindness and practical methods were appreciated and will be remembered by those who worked with her. Her death severs a link with the nursing world of the past which comparatively few can call to mind."

Dr. E. Mountjoy Pearse gives us his recollections of the two sisters:—

"Sister Fanny was always ready to help residents as well as dressers in any matter in her department. She taught the dressers all about surgical instruments and procedure at operations. In my memory she lives as a very kindly and efficient lady."

"Sister Julia," he writes, "had charge of Paul Bush's female wards. She was an excellent Sister to work with, a good disciplinarian, yet very popular with the nurses under her. She was always extremely well 'turned out,' 'every hair on duty,' so to speak. In my time all dressers acknowledged her as an expert on how to do or put on a dressing. No matter which surgeon they might be dressing for, every dresser used to endeavour to get Sister Julia to teach him how to put on a 'gum and chalk stocking,' for these in her hands looked like a plate from a book. Her wards were always in a state of being ready for inspection. She was indeed an excellent Ward Sister."

Their nephew, Flight-Lieut. E. C. Gross, R.A.F., M.S., who has kindly supplied information about their family, says:—

"Besides their wonderful devotion to their work the other wonderful thing was the love that each sister had for the other. They retired in 1921 to Brooklyn, Ashburton, where they spent the rest of their lives in a small cottage surrounded by reminders of a life-work well and cheerfully done."

GEORGE HENRY TEMPLE, M.B., C.M.

BY the death on 24th January, 1940, at the age of 75, of George Temple, Weston-super-Mare and the surrounding district have lost a much-loved and respected friend, as well as an outstanding surgeon. A bachelor, generous and kind-hearted, he was full of vitality almost to the day of his death.

George, with his wonderful dexterity and keenness of mind, was for 35 years the soul of the hospital for which he worked so unceasingly and untiringly.

Educated at Repton, he took his degree at Edinburgh University in 1888. He became House Surgeon to the Weston-super-Mare Hospital in 1895, and in 1897 set up in practice in the town and almost at once obtained the posts of Poor Law and Police Court Medical Officer. In 1905 he was appointed as Surgeon to the Hospital and remained on the active staff until his death.

He died after a few days' illness in the Hospital he had loved and served so long and faithfully.

As a younger man he was a very keen tennis player, an excellent shot, and interested in amateur theatricals, in which he took an active part. A wonderful billiards and snooker player, he held his position as one of the best players in the town almost until the time of his death.

For thirty-six years George Temple was Chief Officer of the Fire Brigade, and only relinquished the post at the outbreak of the present war, when the appointment of a whole-time officer became necessary.

At his funeral the coffin was carried on the fire-engine, and the Brigade formed a guard of honour.

He took an active interest in Freemasonry, and was a Founder and Past Master, King Alfred Lodge, No. 3169; Member of St. Kew Lodge, No. 1222; Past Provincial Junior Grand Warden (Somerset); Past Z of the Inkerman Chapter, 1222, and Past Provincial Grand Registrar of the Royal Arch Chapter of Somerset; a former Member and Past Master of the Else Mark Lodge No. 102; Past M.W.S. of the William De Irwin and of the 30th Degree of the Ancient and Accepted Right Rose Croix; P.E.P. of the Worlebury Preceptory of St. Dunstan; and P.P. Banner Bearer of the Provincial Priory of Somerset, Monmouth and South Wales—Knights Templars.

He became a member of the B.M.A. in 1888 and was Chairman of the East Somerset Division in 1933 and 1934, and a member of the present Local Medical War Committee.

Many a young practitioner has benefited by his kindly criticism and advice.

He will long be mourned and missed by the many he helped, directly and indirectly.

ELLIOTT THORNTON GLENNY, M.B., B.S., M.R.C.S., L.R.C.P.

WE regret to record the death of Dr. E. T. Glenny on 11th February, 1940, at the early age of 59, after a distinguished career in many spheres and in various lands. Dr. Glenny was the son of Mr. and Mrs. Edward Glenny, of Barking, Essex, and was educated at Redland Hill House School, Bristol, and St. Bartholomew's Hospital, where he qualified in 1906 and became house-surgeon to Mr. Butlin. In 1908 he married Jessie, daughter of Mr. and Mrs. Dence, of Bromley, Kent, and with her he went in 1910 as a Medical Missionary in the Evangelical Union of South America to Cuzco in the Andes. After one year his wife died of typhoid fever, and he returned to England with his two daughters. Dr. Glenny then took part in two explorations, first with the Yale Harvard expedition to the land of the Incas in 1911, and in the following year up the Amazon and 500 miles of its tributaries to investigate the Putumayo rubber atrocities. During the war of 1914–18 Dr. Glenny served in France with the R.A.M.C., and proved to be an indefatigable and capable surgeon. He had early and extensive experience of gas casualties of all kinds whilst in France, and wrote some of his earliest reports on the effects of " poison gases " in the Field. After the war he returned to Bristol and practised for fourteen years in Clifton. In 1936 he retired from private practice to become Medical Instructor under the A.R.P. Department of the Home Office for the South Wales Area, and subsequently transferred to a similar post in the City of Bristol.

Glenny was a fine athlete who had represented his hospital and the three counties of Essex, Lincolnshire and Gloucestershire at hockey, and he was a member of the British Ski Club and a Fellow of the Royal Geographical Society.

He was a man of deep religious convictions, who in his student days had been secretary of the Christian Association at Bart's, and in his later days was chairman of the Bristol Medical Mission. Everything he took up was carried out enthusiastically and conscientiously.

In 1916 he married Winifred, daughter of Dr. Christopher Elliott, who, with the two daughters of his first marriage, survives him. To them we offer our deepest sympathy.

Meetings of Societies

Bristol Medico-Chirurgical Society.

DURING the past Session three afternoon meetings have been held. On Wednesday, 13th December, Professor Samson Wright addressed the Society on the subject of "The Hypothalamus and Posterior Pituitary—Recent Clinical and Physiological Advances." On Wednesday, 10th January, Colonel Whitby spoke on "Chemotherapy—A survey of present knowledge concerning the sulphonamide group of drugs." On Thursday, 15th February, members of the Society visited the X-ray Therapy and Radium Department at the Bristol General Hospital, where Dr. F. Gower Bergin and his colleagues had arranged demonstrations of the various methods in use. That these "war-time" meetings have been welcomed is shown by the fact that so many attended.

The Medical Library of the University of Bristol

WITH WHICH IS INCORPORATED

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the list in December, 1939.

April, 1940.

American Laryngological Association (1) .. 1 volume.
Association of American Physicians (2) .. 1 volume.
The "Black Bag" (3) .. .. .. 5 volumes.
British Museum (4) .. .. 2 volumes.
Carnegie Institution of Washington (5) .. 1 volume.
Ciba Limited (6) .. .. 2 volumes.
Down Brothers Limited (7) .. .. .. 3 volumes.
Miss Flemming (8) .. .. 5 volumes.

General Medical Council (9)	2 volumes.
Professor E. W. Hey Groves (10)	19 volumes.
L'Institut Bunge (11)	1 volume.
Dr. J. E. King Bequest (12)	1 volume.
Medical Library of U.S. Army (13)	1 volume.
Michell Clarke Fund (14)	25 volumes.
Middlesex Hospital Medical School (15) ..	2 volumes.
Munro Smith Fund (16)	10 volumes.
Otago University (17)	1 volume.
Dr. J. E. Shaw Bequest (18)	12 volumes.
Professor A. Rendle Short (19)	1 volume.
Dr. G. E. F. Sutton (20)	1 volume.
The Vice-Chancellor (21)	1 volume.
Stephen Zamenhof (22)	1 volume.

Unbound periodicals have also been received from Dr. R. F. Barbour, Professor E. W. Hey Groves, Professor C. Bruce Perry, Dr. G. de M. Rudolf, and Dr. J. O. Symes.

THE ONE HUNDRED AND SEVENTIETH LIST OF BOOKS.

The figures in round brackets refer to the figures after the names of the donors. The books to which no such figures have been attached have either been bought from the Library Fund or received through the *Journal*.

Albee, F. H. .. .. *Injuries and Diseases of the Hip* .. .. (10) 1937
Anderson, C. G. .. *An Introduction to Bacteriological Chemistry* (3) 1938
Artificial Limbs and their relation to Amputations .. .. .. (14) 1939
Austen, E. E. .. .. *The House-Fly* .. .. 4th Ed. (4) 1939
Bailey, H. H. .. .. *Physical Signs in Clinical Surgery* .. 7th Ed. 1940
Bailey, H. H., and Matheson, N. M. *Recent Advances in Genito-Urinary Surgery* .. .. (14) 1936
Barr, J. (ed.) .. .. *Abrams' Methods of Diagnosis and Treatment* (8) 1925
Beeston, G. N. .. .. *Conjoint Finals* .. .. .. 3rd Ed. (10) 1938
Bourne, A. W., and Williams, L. *Recent Advances in Obstetrics and Gynæcology* .. .. 4th Ed. (14) 1939
Boyd, W. .. .. .. *Surgical Pathology* .. .. .. 4th Ed. (14) 1939
Brain, W. R. .. .. *Recent Advances in Neurology* 4th Ed. (14) 1940
Brauer, J. C. .. .. *Dentistry for Children* .. .. (14) 1939
Breen, G. E. .. .. *Essentials of Fevers* .. .. (3) 1939
Brend, W. A. .. .. *Handbook of Medical Jurisprudence and Toxicology* .. .. 7th Ed. (16) 1934
Brown, J. W. .. .. *Congenital Heart Disease* .. .. .. (18) 1939
Browne, F. J. .. .. *Antenatal and Postnatal Care* 3rd Ed. (16) 1939

Burn, J. H. .. .. *Recent Advances in Materia Medica* .. (14) 1932
Byrne, J. G. .. .. *Studies on the Physiology of the Eye* 1933
Carpenter, T. M. .. *Tables, Factors and Formulas for computing Respiratory Exchange and Biological Transformations of Energy* .. .. 3rd Ed. (5) 1939
Ciba Hypnotics and Analgesics. Ciba Handbook, No. 3 .. .. (6) 1939
Clark, W. E. le Gros .. *The Tissues of the Body* .. .. .. (16) 1939
Cope, V. Z. .. .. *Early Diagnosis of the Acute Adbomen* 8th Ed. 1940
Crile, G. W. .. .. *Hemorrhage and Transfusion* .. .. (8) 1909
Cumberbatch, E. P. *Essentials of Medical Electricity* 8th Ed. (14) 1939
Dible, J. H., and Davie, T. B. *Pathology* .. .. (14) 1939
Di Natale, L. .. .. *Il Cancero dello Stomaco* .. .. .. (10) 1939
Down Bros. .. .. *Catalogue of Surgical Instruments and Appliances, Aseptic Furniture, Sterilizers, etc., with appendix.* 3 Vols. .. .. (7) 1935–38
Dunlop, D. M. and others (ed.) *Textbook of Medical Treatment* .. (3) 1939
Eden, T. W., and Holland, E. L. *A Manual of Obstetrics* 8th Ed. (14) 1937
Edwards, F. W. .. *British Blood-Sucking Flies* .. .. .. (4) 1939
Flagg, P. J. .. .. *The Art of Anæsthesia* .. .. 4th Ed. (8) 1928
Fraser, D. .. .. .. *Clinical Studies in Epilepsy* .. .. .. (8) 1924
Goldsmith, W. N. .. *Recent Advances in Dermatology* .. .. (14) 1936
Gortner, R. A. .. .. *Outlines of Biochemistry* .. .. .. 2nd Ed. 1938
Grimsdale H., and Brewerton, E. *A Textbook of Ophthalmic Operations* .. .. 3rd Ed. (14) 1937
Groves, E. W. Hey .. *Synopsis of Surgery* .. .. 11th Ed. 1940
Hale-White, W. .. *Materia Medica, Pharmacy, Pharmacology and Therapeutics* .. .. .. 24th Ed. (16) 1939
Halliburton, W. D., and McDowall, R. J. S. *Handbook of Physiology.* 36th Ed. (16) 1939
Hentschel, C. C., and Cook, W. R. I. *Biology for Medical Students.* 3rd Ed. (14) 1939
Hertzler, A. E. .. *Surgical Operations with Local Anæsthesia* (8) 1912
Hewer, C. L. .. .. *Recent Advances in Anæsthesia and Analgesia* 3rd Ed. (14) 1939
Hogben, L. .. .. *Genetic Principles in Medicine and Social Science* 1931
Holder, E. J. .. .. *Surgical Sutures and Ligatures* .. .. (10) 1939
Hutchinson, R. (ed.) *Index of Treatment* .. .. .. 12th Ed. (10) 1940
Illingworth, C. F. W. *A Short Textbook of Surgery* 2nd Ed. (14) 1939
Jamieson, E. B. .. *Illustrations of Regional Anatomy.* 2nd Ed. Sections VI., VII .. .. (10) 1939
Kerley, P. .. .. .. *Recent Advances in Radiology* 2nd Ed. (14) 1936
Kerr, J. M. M. .. *Operative Obstetrics* .. .. .. 4th Ed. (14) 1937
Kronfeld, R. .. .. *Histopathology of the Teeth* .. 2nd Ed. (14) 1939
Lawrence, R. D. .. *The Diabetic Life* .. .. ..11th Ed. (16) 1939
McCance, R. A., and Widdowson, E. M. *The Chemical Composition of Foods* 1940
McCarrison, R. .. .. *Food, the Foundation of Health* (Sanderson-Wells Lecture) .. .. (15) 1939
McGregor, A. L. .. *Synopsis of Surgical Anatomy* 4th Ed. (10) 1939
McKay, W. J. S. .. *Appendicitis* .. .. (10) 1936

Mackie, J. J., and McCartney, J. E. *Handbook of Practical Bacteriology.* 5th Ed. (3) 1938

May, C. H., and Worth, C. *A Manual of Diseases of the Eye* 8th Ed. (16) 1939

Miller, H. C. (ed.) .. *Functional Nerve Disease* .. .. .. (21) 1920

Moore, N. .. .. .. *History of St. Bartholomew's Hospital.* 2 Vols 1918

New and Non-Official Remedies .. .. (14) 1939

Ogilvie, R. F. .. .. *Pathological Histology* .. .. (3) 1940

Ogilvie, W. H. .. .. *American Journey* .. .. (10) 1937

Orr, H. W. .. .. *A New Era in the Treatment of Osteomyelitis* (10) 1930

Parsons, J. H. .. .. *Diseases of the Eye* .. .. .. 9th Ed. (16) 1938

Piney, A. .. .. .. *Recent Advances in Hæmatology* 4th Ed. (14) 1939

Ranson, S. W. .. .. *The Anatomy of the Nervous System* 6th Ed. (14) 1939

Riddell, V. H. .. .. *Blood Transfusion* 1939

Rogers, J. S. .. .. *Physics for Medical Students* .. 2nd Ed. 1939

Rolleston, H. D. .. *British Encyclopædia of Medical Practice.* 12 Vols. .. .. (18) 1936–39

Roxburgh, A. C. .. *Common Skin Diseases* .. .. .. 5th Ed. 1939

Rudolf, G. de M. (ed.) *Psychological Aspect of Delinquency* 1939

Schlosser, R. O. .. *Complete Denture Prosthesis* .. .. .. (14) 1939

Scott, S. G. .. .. *Wide Field X-ray Treatment* .. .. (10) 1939

Sex Hormones. Ciba Handbook, No. 4 .. .. (6) 1939

Siddle, G. H. .. .. *Technique of Stainless Steelwork in Mechanical Dentistry* .. .. (14) 1939

Singer, C. .. .. .. *Greek Biology and Medicine* .. .. .. (12) 1922

Smith, A. G. (ed.) .. *Irving's Anatomy Mnemonics* .. .. 4th Ed. 1939

Tidy, N. M. .. .. *Massage and Remedial Exercises* .. 4th Ed. 1939

Tredgold, A. F. .. .. *Textbook of Mental Deficiency* 6th Ed. (14) 1937

Trueta, J. .. .. .. *El Tractamento de les Fractures de Guerra* (10) 1938

Trueta, J. .. .. .. *Treatment of War Wounds and Fractures* (10) 1939

Turner, J. .. .. .. *The Macewen Outlook in Surgery* .. (10) 1939

Watson-Jones, R. .. *Fractures and other Bone and Joint Injuries* (10) 1940

Webb-Johnson, A. .. *Surgery in England in the Making* (Syme Oration, 1939) .. .. (10) 1939

Whitby, L. E. H., and Britton, C. J. C. *Disorders of the Blood.* 3rd Ed. (16) 1939

Whiting, A. J., and Sutton, G. E. F. *Aids to Medical Diagnosis.* 5th Ed. 2 copies (2, 10) 1940

Whitnall, S. E. .. .. *The Study of Anatomy* .. .. 4th Ed. (19) 1939

Young, J. .. .. .. *Textbook of Gynæcology* .. .. 5th Ed. (14) 1939

Zamenhof, S. .. .. *On Present Possibilities of Increasing the Higher Functions of the Cortex* .. .. .. (22) 1940

TRANSACTIONS, REPORTS, JOURNALS, ETC.

Annual Report of the Smithsonian Institution, 1938 1939

Die Chirurgie. Lieferung 1—2. 2te Aufl. .. .. (10) 1939

Collected Papers, Middlesex Hospital Medical School .. .. (15) 1938–39

Dentists' Register, 1940 .. .. (9) 1940

Far Eastern Association of Tropical Medicine—Transactions 9th Congress. Vol. II 1935

Index-Catalogue of Library of Surgeon-General's Office, U.S. Army. 4th Series. Vol. 4 .. .. (13) 1939
Medical Register, 1940 .. .. (9) 1940
Nature. Vol. 4 1871
Proceedings of the University of Otago Medical School. No. 17 (17) 1940
Transactions of the American Laryngological Association. Vol. 61 (1) 1939
Transactions of the Association of American Physicians. Vol. LIV (2) 1939
Transactions of the Ophthalmological Society of the United Kingdom. Vol. LIX, Pt. II 1939
Travaux de l'Institut Bunge. Vol. II .. .. (11) 1937

Publications Received

From MESSRS. GEORGE G. HARRAP & CO. LTD.:

Cancer. By GUSTAVE ROUSSY. Translated by KENNETH ELLIOTT, M.B., B.S., M.R.C.S., L.R.C.P., and JOHN DE SWITE, M.B., B.S., M.R.C.S., L.R.C.P. Price 6s.

From H. K. LEWIS & CO. LTD.:

Practical Food Inspection. By C. R. A. MARTIN, M.R.San.I. Second Edition. In two volumes. Volume 1—*Meat Inspection*, price 15s. Volume 2—*Fish, Poultry and other Foods*, price 12s. 6d.

From MESSRS. E. & S. LIVINGSTONE:

A Pocket Medical Dictionary. Compiled by LOIS OAKES, S.R.N., D.N. Assisted by T. B. DAVIE, B.A., M.D., M.R.C.P. Fourth Edition. Price 3s. 6d.

Textbook of Public Health. By W. M. FRAZER, O.B.E., M.D., Ch.B., M.Sc., D.P.H., and C. O. STALLYBRASS, M.D., Ch.B., D.P.H., M.R.C.S., L.R.C.P. Tenth Edition. Price 21s.

From OXFORD UNIVERSITY PRESS:

An Introduction to Medical Genetics. By J. A. FRASER ROBERTS, M.A., M.B., D.Sc., F.R.S.E. Price 15s.

The Early Diagnosis of the Acute Abdomen. By ZACHARY COPE, B.A., M.D., M.S., F.R.C.S. Eighth Edition. Price 10s. 6d.

British Red Cross Society Notebook, with Diagrams for use during attendance at Red Cross courses of First Aid. Ed. by ST. J. D. BUXTON, M.B., B.S., F.R.C.S. Second Edition. Price 2s. 6d.

Tuberculosis of Bone and Joint. By G. R. GIRDLESTONE, M.A., B.M., F.R.C.S. Price 30s.

The Sexual Perversions and Abnormalities. By CLIFFORD ALLEN, M.D., M.R.C.P., D.P.M. Price 7s. 6d.

Surgery of the Hand. By JOHN HAROLD COUCH, M.A., M.B., F.R.C.S. Price 7s.

A Textbook of Psychiatry for Students and Practitioners. By D. K. HENDERSON, M.D., F.R.F.P.S., F.R.C.P.E., and R. D. GILLESPIE, M.D., F.R.C.P., D.P.M. Fifth Edition. Price 20s.

From MESSRS. JOHN WRIGHT & SONS LTD.:

British Journal of Surgery. No. 107. Price 12s. 6d.

Leprosy. By SIR LEONARD ROGERS, K.C.S.I., C.I.E., M.D., F.R.C.P., F.R.C.S., F.R.S., I.M.S., and ERNEST MUIR, C.I.E., M.D., F.R.C.S. Second Edition. Price 15s.

The Surgery of the Alimentary Tract. By SIR HUGH DEVINE, M.S., F.R.A.C.S., F.A.C.S. Price 63s.

Local Medical Notes

THE twenty-ninth Long Fox Memorial Lecture will be delivered in the University on Tuesday, 2nd July, at 8.30 p.m. by Professor T. B. Davie. The subject will be announced later.

NEW ARRANGEMENTS FOR OUT-PATIENTS.

The amalgamation of the Bristol Royal Infirmary and Bristol General Hospital to form the Bristol Royal Hospital has now reached a stage at which it may be useful to give a short account of local medical arrangements.

From 1st June Out-patients will be seen as follows:—

At Royal Infirmary.	*At General Hospital.*
Medical.	Gynæcological.
Surgical.	Skin Diseases.
Orthopædic.	Ear, Nose and Throat.
Fractures.	Surgical (probably).
(Casualties).	(Casualties).

All Eye cases at Eye Hospital only.

All Dental cases at Dental Hospital only.

Midwifery In-patients will be admitted to the Maternity Hospital, Southwell Street, or to Southmead Hospital *only:* domiciliary midwifery is in the charge of the M.O.H., and antenatal attention is given at the Central Health Clinic, Tower Hill, and the other municipal clinics.

APPOINTMENTS.

The following appointments have been made in the University Dental Hospital and School:—

Honorary Dental Surgeons and Clinical Teachers in Dental Surgery: Messrs. G. F. Fawn, N. H. Kettlewell, F. R. Hogbin, W. J. Lennox, J. Wells, N. H. Simmonds, S. K. Rigg, L. E. Claremont, Trevor Johnson, R. H. McKeag and J. W. E. Snawdon. Dental Assistant - Dean and Lecturer in Dental Surgery: P. J. Stoy. Lecturer in Dental Prosthesis: R. B. Pickles. Senior House Surgeon: Mr. R. S. Martin; Junior House Surgeon, Mr. G. R. Styles. Almoner Secretary: Miss M. G. Cornwall Jones, M.A. Sister: Miss E. G. Thomson.

EXAMINATION RESULTS.

University of Bristol.—Students of the University have recently passed the following examinations:—

M.B., CH.B.—*Final Examination. Pass:* W. H. G. Elliott.

University of Dublin.—M.D. (*by Thesis*)—R. E. Hemphill, M.B., B.Ch., B.A.O.

Conjoint Board.—L.R.C.P., M.R.C.S.—*First Examination. Pass:* B. L. Finzel (Physiology).

L.R.C.P., M.R.C.S.—*Final Examination.* D. L. Bayley* (Medicine).

L.D.S., R.C.S.—*Final Examination. Pass Part I:* G. R. Styles. *Part II:* G. R. Styles,* S. G. Sheffield.*

Society of Apothecaries, London.—L.M.S.S.A.—*Final Examination. Pass:* E. A. Griffiths* (Midwifery).

* Qualified.

Bristol Medico-Chirurgical Society.

President.

L. A. MOORE, M.B., Ch.B. Brist.

President-Elect.

C. CORFIELD, M.D. Durh.

Committee.

Ex-Officio { J. A. NIXON, *C.M.G.*, B.A., M.D. Cantab., F.R.C.P. (Editor of *Journal*).
(Vacant), (Hon. Librarian).

Elected.

C. A. MOORE, M.B., M.S. Lond., (Ex-President).
R. C. CLARKE, *O.B.E.*, M.B., Ch.B.Brist.
H. H. CARLETON, M.A., M.D., B.Ch.Oxon.
C. CORFIELD, M.D. Durh.
A. L. TAYLOR, M.D. Lond.
P. S. MARTIN, *M.C.*
T. MILLING, M.B., Ch.B. Belf.
W. V. WOOD, *M.C.*, B.A. Cantab.
H. L. SHEPHERD, M.B., Ch.M. Brist.
W. A. JACKMAN, F.R.C.S.

Honorary Secretary.

R. V. COOKE, Ch.M.

Honorary Treasurer.

A. E. ILES, *O.B.E.*, M.B., B.S. Lond., F.R.C.S.

University Library Sub-Committee.

A. R. SHORT, B.Sc., M.D. Lond., F.R.C.S.
C. BRUCE PERRY, M.D. Brist., F.R.C.P.
J. H. DREW SMYTHE, *M.C.*, M.S., M.D. Lond., F.R.C.S., F.C.O.G.

Medical Practitioners wishing to join the Society are requested to communicate with the Hon. Secretary, Mr. R. V. COOKE, Failand Lodge, Guthrie Road, Clifton. The Annual Subscription is £1 1s., payable to Hon. Treasurer.

Extracts from Journal By-laws.

4.—The *Journal* shall be delivered free to Subscribers and also to Members of the Society whose subscriptions are not in arrear.

6.—The Annual Subscription to the *Journal* is 10/6, payable to Hon. Treasurer.

Communications intended for insertion in the *Journal* should be sent to the Editor, Dr. J. A. NIXON, 7 Lansdown Place, Clifton, Bristol.

Books for Review and Exchange Journals should be sent to the Assistant Editor, *Bristol Medico-Chirurgical Journal*, Medical Library, The University, Bristol. Reviews should be returned with the books to Dr. T. M. LING, 50 Pembroke Road, Bristol 8.

Communications referring to the delivery of the *Journal* should be sent to the Hon. Treasurer, Mr. A. E. ILES, 87 Pembroke Road, Bristol 8.

Cases for Binding Vols. I—LVI are now ready, and may be obtained price 2/6 each (postage extra), upon application to J. W. ARROWSMITH LTD., Quay Street, Bristol; or the *Journal* will be bound, including Case, for 7/- per volume. The inclusive index for Volumes I—L may be obtained, price 3/- (postage extra).

Bristol Medico-Chirurgical Society.

PAST PRESIDENTS.

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